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The Outcomes of Offering a Working Lunch Session in Improving Adolescent Students' Assignment Completion Rate and Academic Achievement in Mathematics

Kristian Edgeman

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The Outcomes of Offering a Working Lunch Session in Improving Adolescent Students'
Assignment Completion Rate and Academic Achievement in Mathematics

Kristian E. Edgeman

Kennesaw State University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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APPROVED BY:

Susan Stockdale, Ph.D. Committee Chair

Mei-Lin Chang, Ph.D. Committee Member

Kimberly Cortes, Ph.D. Committee Member

Abstract

A decline in academic motivation, organizational skills, and the desire to learn in adolescent students cause middle grade teachers to constantly look for ways of encouraging students to complete assignments on time and achieve academic growth. Tactics such as positive reinforcement and punishments are frequently offered to adolescent students with the purpose of encouraging academic motivation. The inclusion of zeros in the grade book, although a hodgepodge grading practice, is often used as a tool to boost student motivation in prompt assignment completion; however, there is a lack of research to support this. The current study was designed to analyze the impact that a working lunch session, where students have the opportunity to make up missing assignments, verses a zero in the grade book, without the opportunity to make up missing work, can have on adolescents' completion rate and academic achievement in mathematics. The 13-week study focused on seventh grade mathematics students in a Title I middle school in North Georgia. Along with the numerical data, students' pre- and post-interviews were conducted to get a qualitative perspective on students' views of punishment and how they think and feel that a zero in the grade book verses a working lunch session impacts their motivation and self-regulation to complete assignments on time and grow academically in mathematics. The intended goal of the current study will be to add to the body of research related to the use of reinforcement and its impact on student motivation as well as determine if giving zeros or a working lunch session, common practices in adolescent education, can have an impact on assignment completion rate and academic achievement.

Keywords: adolescent learners, negative reinforcement verses punishment, student motivation, assignment completion rate, academic achievement

Dedication

To my wonderful husband Jacob, you've stood by me and encouraged me when I lacked motivation. You celebrated me and made me feel like a super hero as I have tried juggling all of my responsibilities. You have been an incredible partner as we have finished degrees, flipped houses, and added our beautiful Benjamin to our family; there is no one else that I would rather have by my side. I know that I tell you all the time, but I really do not know what I would do without you in my life. I will always love you more than you know.

Mom and Dad, you have both taught me what it looks like to work hard and have a great work ethic. Thank you for always believing in me, pushing me to reach my full potential, and guiding me to becoming the adult that I am today. Your love and support have always meant the world to me, and I appreciate the countless time, money, and effort that you both have invested in me to get me to this point. To my amazing sister Jessica, you have always been my biggest fan, and I hope you will always know how much that has meant to me. You are the best sister and friend anyone could hope to have.

To my beautiful baby boy Benjamin, you will always be my greatest accomplishment. Being your mommy is the greatest gift in the world. I love you so much.

Dr. Stockdale, Dr. Chang, and Dr. Cortes, my dissertation chair and committee, I appreciate the time and effort that you all put in to my doctoral process to help the journey go smoothly for me. It was truly a pleasure learning from you all.

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CHAPTER ONE: INTRODUCTION

Background

Grades have consistently had an important place in America's educational system since the 1800s (Hirschenbaum, Simon, & Napier, 1971). Today, progress reports and report cards are still given multiple times throughout the school year to display student academic achievement, content mastery, and learning growth. Grades from those progress reports and report cards are analyzed by students, parents, teachers, and administrators to determine students' academic progress and abilities. However, research suggests that grading in many classrooms today are a "hodgepodge" of criteria ranging from student learning to behavior (Grimes, 2010). With variables such as student behavior, motivation, attendance, organizational skills, and teacher bias impacting students' grades, the validity of students' grades is in question. Various measurement experts agree that behaviors that are non-academic such as motivation, classroom behavior, and attendance should be evaluated separately from a student's grade; however, many teachers continue to include non-academic factors such as these in their grading practices (Canady & Hotchkiss, 1989; Frisbey & Waltman, 1992).

Buffum, Mattos, and Weber (2009) write that grading practices are powerful tools that teachers can use to inspire or extinguish the desire for students to learn. The writers went on to state that this is especially true in instances where a student has had a history of doing poorly. However, the use of zeros is a prevalent practice in classrooms across the United States even though it is an inaccurate reflection of students' abilities (Raebeck, 1993). This could be largely in part to the fact that teachers often have a lack of formal training in successful grading practices (Stiggins, 1993) and often revert back to the grading practices that were used by their teachers (Guskey & Bailey, 2011). Guskey (2004) argues that, "Teachers see zeros as their

ultimate grading weapon” (p. 50). Therefore, zeros are given as punishment for a variety of reasons ranging from assignments being late to misbehaving in class (Canady & Hotchkiss, 1989; Stiggins & Duke, 1991). Although teachers see assigning a zero as an academic punishment, many believe that the punishment is “justified and deserved” (Guskey, 2004, p. 50). Guskey (2004) goes on to argue that teachers should consider alternatives to zeros such as issuing an “I” or “incomplete” grade until the assignment is turned in, report non-academic content such as behavior and motivation separately from the academic grade, or changing the grading scale.

Along with the issue of the validity of grading practices taking place in schools across the United States and the use of zeros as punishment in grading, the motivation to learn and the organizational skills to complete and turn-in assignments in the adolescent years is also a concern. Elam (1989) writes that teachers have an ongoing concern with students’ lack of interest in academics. Research has found that motivation in adolescent learners declines as these students move from elementary to secondary education (Van der Werf, Opdenakker, & Kuyper, 2008; Wigfield, Eccles, & Rodriguez, 2006). Along with a decline in motivation, adolescents experience biological, cognitive, self-concept, and identity changes in early adolescents that are all contributing factors to the adaptation of these students’ academic performances (Wigfield et al., 2006).

Organizational issues increase in severity as students progress in their academic years as well (Booster, DuPaul, Eiraldi, & Power, 2010; Langberg et al., 2010). Middle grades are when those organizational issues tend to escalate the most (Evans, Serpell, & White, 2005). Teachers will often look for multiple ways to enhance student motivation ranging from a variety of positive reinforcement, negative reinforcement, and punishment. With research suggesting that

factors such as effort and motivation being present in teachers' grading practices as forms of motivational tools, the question exists of whether the use of zeros is in fact a successful motivational technique or if an alternative intervention can lead to greater motivation and self-regulation to complete assignments on time as well as lead to greater academic achievement.

Problem Statement

With hodgepodge grading practices prevalent in classrooms across the United States and adolescent student motivation at an all-time low in their learning processes, it is essential for teachers of adolescents to incorporate the best research-based grading and motivational strategies to help engage students in their self-regulation habits to complete and turn in assignments on time and to increase their academic achievement. Guskey (2007) stated the following:

If teachers follow assessments with high-quality corrective instruction, then students should have a second chance to demonstrate their new level of competence and understanding. This second chance determines the effectiveness of the corrective process while also giving students another opportunity to experience success in learning, thus providing them with additional motivation. (p.23)

If a second chance in learning should take place, should a second chance to turn in and complete an assignment not also be present? If that second chance to complete and turn in that assignment is available for students, does it truly impact their motivation and self-regulation to complete future assignments on time, and does it enhance academic achievement? These pressing questions propel further research in to techniques that encourage assignment completion and academic achievement in adolescents.

With the use of zeros continuing to be a prevalent practice in classrooms across the United States, it is essential for educators to look for alternative ways of redirecting adolescent

students' behaviors so that they are more motivated and organized to complete and turn-in assignments on time. Along with increasing motivation to turn-in mathematics assignments on time, it is important to note that a large percentage of American students are at or below proficiency in mathematics (Lee, Grigg, & Dion, 2007). Therefore, educators should be looking for practices that will encourage and enhance academic achievement as well as student motivation. Therefore, outdated and non-research based practices such as offering zeros in the grade book should be reconsidered when working with adolescents.

Purpose

This research study sought to investigate the impact of a working lunch session, where students had the opportunity to make up missing assignments, verses a zero in the grade book, where students did not have the opportunity to make up missing assignments, on adolescents' assignment completion rate in mathematics as well as academic achievement. The mathematics assignments in the study examined all assignments given in the classroom whether the tasks were asked to be completed during the school day or as a homework assignment. The study also looked at the impact that a working lunch session in lieu of the assigning of zeros in the grade book had on the validity of grading practices in a middle school setting. It explored the use of a working lunch session and the use of a zero in the grade book within seventh grade mathematics classrooms at a Title I middle school in a North Georgia school district. The working lunch session continued until students turned in the completed assignment, reinforcing the idea that assignments should be turned-in in compliance with the initial time expectations of the teacher. When the zero in the grade book was given, students did not have the opportunity to turn in the assignment at a later time. Qualitative interviews looked at students' views and feelings of the working lunch session verses the zero in the grade book, which do they view more as a

punishment, and whether they thought it could impact or benefit them in their motivation and self-regulation to turn in assignments on time as well as their academic progress in mathematics.

Research Questions

This study will attempt to answer the following quantitative research questions:

1. A. Is there a significant increase in the mathematics assignment completion rate when a working lunch session is given for missing assignments verses a zero in the grade book?

Hypothesis 1: A statistically significant increase is present in the mathematics assignment completion rate when a working lunch session is given for missing assignments verses a zero in the grade book.

Null Hypothesis: A statistically significant increase is not present in mathematics assignment completion rate when a working lunch session is given for missing assignments verses a zero in the grade book.

- B. Is there a significant increase in the mathematics assignment completion rate between sexes when a working lunch session is given for missing assignments verses a zero in the grade book?

Hypothesis 1: A statistically significant increase is present in the mathematics assignment completion rate between sexes when a working lunch session is given for missing assignments verses a zero in the grade book.

Null Hypothesis: A statistically significant increase is not present in mathematics assignment completion rate between sexes when a working lunch session is given for missing assignments verses a zero in the grade book.

2. Is there a significant increase in student academic achievement in mathematics when students are given a working lunch session for missing assignments verses a zero in the grade book?

Hypothesis 1: A statistically significant increase will be present in students' performance on a mathematics summative assessment after students are given a working lunch session for missing assignments verses a zero in the grade book.

Null Hypothesis: A statistically significant increase will be not be present in students' performance on a mathematics summative assessment after students are given a working lunch session for missing assignments verses a zero in the grade book.

While addressing the research questions, the study will either accept or reject the hypotheses.

Along with the quantitative data, qualitative student pre- and post-interviews will be administered to address the following questions:

1. How do adolescents view a zero in the grade book without a makeup opportunity?
2. How do adolescents view a working lunch with an opportunity to make up a missing assignment?
3. How do adolescent students view punishments and negative reinforcers in helping motivate them to complete mathematics assignments on time?
4. In what ways did adolescent students' views of the zero in the grade book versus a working lunch session change over time?

Identification of Variables

The independent variable in all of the research questions will be the intervention phases, the first four-and-half weeks where a zero in the grade book without the opportunity to make up a missing assignment and the last nine weeks where students are given a working lunch session

until the assignment is turned in in lieu of a zero in the grade book. When running and analyzing statistical analyses for the second part of the first research question, sex also becomes an independent variable. The dependent variable in parts A and B of the first research question is the percentage rate of students' on-time assignment completion. The dependent variable in the second research question is academic achievement as measured by the normalized mean item gain scores from the pretest, mid-test, and posttest results.

Definitions

Assignment completion rate- the percentage of assignments that a student completes and turns in on time as set by the classroom teacher.

Motivation- Parkay, Hass, and Anctil (2010) write that "motivation is the urge to act, which results from a stimulus" (p. 189). Ferguson (2000) suggests that motivation is a person's inner drive to do or complete something. Motivation can also be seen as a force that encourages actions toward accomplishing a task or goal (Eggen & Kauchak, 1994). In classrooms, many teachers measure motivation as a student's inner drive to pay attention in class as well as complete and turn in class or homework assignments on time. In this study, motivation will serve as the dependent variable and will be measured by the number of assignments that were not turned in to the teacher or the number of working lunch sessions that a student had to serve. A student turning in all assignments would be considered to have more motivation in comparison to a student that has four missing assignments or four working lunch sessions.

Negative Reinforcement- Negative reinforcement can be defined as taking away a negative consequence so that the desired behavior can be repeated (Schermerhorn, Hunt, & Osborn, 2003). In this study, the researcher will determine what students view as a negative reinforcement, a zero in the grade book or a working lunch session, through qualitative

interviews. The researcher views the working lunch session as a negative reinforcement because the working lunch session takes students away from social time in order to complete a missing assignment, reinforcing the idea that students must turn in all assignments and that they should be turned in during the time expectations set in place by the teacher. However, students could view this more as a punishment.

Normalized Gain Score- Hake (1998) introduced and defined a normalized gain score as “a rough measure of the effectiveness of a course in promoting conceptual understanding” (p. 66). This score is calculated by subtracting the pretest score from the posttest score and dividing that number by the total number of items minus the pretest score. The normalized gain score is often described as “the amount students learned divided by the amount they could have learned” (McKagan, Sayre, & Madsen, 2017, para. 1).

Punishment- Punishment is when a negative consequence is given after an undesired behavior occurs. The researcher views the zero in the grade book without the opportunity to make up a missing assignment as a punishment. However, the researcher will conduct qualitative interviews to determine if students view the zero in the grade book or the working lunch session as more of a punishment.

Self-regulation- Zimmerman (1989) defined self-regulation in students as “the degree that they are metacognitively, motivationally, and behaviorally active participants in their own learning processes” (p. 329). Since turning in an assignment on time is a student's self-regulated act, self-regulation will be measured by the number of missing assignments in the first four-and-a-half weeks of this study and the number of working lunch sessions served in the last nine-weeks of the study.

Social Cognitive Theory- Social Cognitive Theory, SCT, is a learning theory proposed by Albert Bandura in the 1970s (Schunk, 2016). This theory postulates that leaning can take place in a variety of social contexts with self-regulation, motivation, self-efficacy, and cognition all being major components of the learning process (Bandura, 1986). A summative review of the major facets of the SCT are discussed in chapter two.

CHAPTER TWO: REVIEW OF THE LITERATURE

This chapter includes a comprehensive summation of Behaviorism and Social Cognitive Theory as they relate to learning. The in-depth look at these two theories will provide a theoretical framework for the present study. In addition, this chapter will include a review of literature that pertains to the variables and concepts presented in this study. The literature review will look at the following concepts: historical context of grading, standards-based grading, non-achievement criteria in grading, social and cultural context of grading practices, punishment, adolescent learning, assignment completion, and the use of working lunch sessions in a school setting.

Conceptual or Theoretical Framework

There are two major camps of learning theories with specific assumptions on motivation: behavioral and cognitive. These two theories see motivation very differently, especially in the way that a targeted behavior will recur after a reward is taken away. A recurring issue in the research of motivation is the impact that positive or negative reinforcement can have on intrinsic motivation, a person's inner drive to complete a task for the sole purpose of inner satisfaction. This issue stems from the vast differences in behavioral and social cognitive theories. The two theories vary greatly in their thinking on the implications of internal and external motivation on individuals. In addition to motivation, the two theories have different views on self-regulation and self-efficacy practices.

Behaviorism. Behaviorism, founded by John B. Watson, was the leading psychological discipline for the first half of the 20th century (Schunk, 2016). Watson believed that in order for psychology to become a science, it was necessary to study observable and measurable phenomena; therefore, he believed that behavior was the observable and measurable variable to

be studied (as cited in Schunk, 2016, p. 73). Although his research did not include the study of education, Watson's emphasis on environment would later be seen in conditional theories of learning in such researchers as Skinner (Schunk, 2016). While all theories deal with behavior in some ways, the behaviorist conditioning theory of learning "explains learning in terms of environmental events. While not denying the existence of mental phenomena, these theories contend that such phenomena are not necessary to explain learning" (p. 73). Behaviorists view people's actions as responses to stimuli (Hueser, 1999). Hueser also stated that behaviorists' view that a stimulus-response relationship can predict and control behaviors. This conceptual framework will look at connectionism, classical conditioning, contiguous conditioning, and Skinner's operant conditioning.

Connectionism. The connectionism theory of learning was developed by Edward L. Thorndike, an American psychologist (as cited in Schunk, 2016, p. 74). In his theory, Thorndike suggested that learning involves "forming associations (connections) between sensory experiences (perceptions of stimuli or events) and neural impulses (responses) that manifest themselves behaviorally" (as cited in Schunk, 2016, p. 74). His belief in trial and error learning began through studying animals. This gradual, or incremental, learning happens when the learner repeats a variety of attempts to reach their learning task or goal until success is reached. In this theory, conscious awareness is not necessary; rather, the learning connections are made through repetition.

Trial and error learning can be seen in the Laws of Exercise and Effect (Schunk, 2016). The law of use and the law of disuse, components of the laws of exercise and effect, are present in Thorndike's theory (as cited in Schunk, 2016, p. 75). The law of use is when "A response to stimulus strengthens their connection" and the law of disuse is when "A response to a stimulus is

not made, then the connection's strength is weakened, or forgotten" (Schunk, 2016, p. 75). Also, the law of effect, learning that happens when rewarding a consequence takes place or no learning happens when an annoying consequence takes place, is also part of Thorndike's learning theory. Thorndike and Woodworth's study in 1901 found that transfer, or generalization, does not always take place in learning (as cited in Schunk, 2016, p. 76). For example, having the skills to find the area of circle does not mean that a student can effectively find the area of a square. Those differing skills should be explicitly taught. In addition, Thorndike was not a proponent of drilling practice in order to learn; instead, he suggested teaching specific skills in different contexts in order for greater learning and understanding. Schunk (2016) gave the example of teacher education degree teachers learn better in actual classroom environments by learning and working with students than through reading textbooks or watching videos.

Although important to the history of the behaviorist viewpoint, it is important to note that Thorndike revised and even discarded parts of his laws of exercise and effect after further research contradicted his findings (as cited in Schunk, 2016, p. 76). For example, he found that just repetition did not always ensure "Stamp in responses;" therefore, he completely discarded the law of exercise. He found that without feedback it is unlikely for a same behavior to be carried out. In regards to the law of effect, Thorndike later found that rewards can strengthen connections but "punishment does not necessarily weaken them" (as cited in Schunk, 2016, p. 77). Punishment does not teach the new behavior; it only educates the learner on what not to do. In Brown and Burton's study (1978), they found that when students have learned a math problem solving technique incorrectly, they will not forget the incorrect method even after they have been taught and correctly use the correct method.

Thorndike added knowledge to the field of education in a few ways (as cited in Schunk, 2016, p.77). First, he encouraged educators to help students form good habits and teach content with practical application. Secondly, he had very specific beliefs on the sequence of curricula being taught and introduced to learners. He believed that curricula should be taught right before a time when it could be applicable to a learner's life, and curricula should be integrated in multiple subject areas. For example, the skill of finding main idea can be taught in reading class but also in reading social studies and science texts.

Classical Conditioning. Theorized by the salivating dog study and writings of Ivan Pavlov, classical conditioning is the theory that an unconditioned stimulus (UCS) will elicit an unconditioned response (UCR) (Schunk, 2016). When a conditioned stimulus (CS) is later presented, a conditioned response (CR), much like the UCR, then presents itself. A CR can eventually disappear once the CS is no longer repeated frequently; this is known as extinction (as cited in Schunk, 2016, p. 79-80). However, spontaneous recovery can occur over a period of time if a CR presents itself after a CR has been re-presented. Pavlov also theorized that higher-order conditioning can occur when CS can be paired with a different, new stimulus. While higher-order conditioning is still not very well understood, an example of this is believed to be why test failure can eventually lead to the connection of test taking and anxiety or stress.

Emotional responses have been linked to classical conditioning (Watson & Rayner, 1920). For example, in the highly cited Little Albert experiment performed by Watson, baby Albert was studied for a two-month period. Albert began the study with no fear of a white rat that was presented in front of him. Later, a steel bar was rung with a hammer when Albert would reach for the same white rat. The loud noise would generate a scared reaction from Albert. This same sequence was repeated. After a week's time, Albert would reach out and

quickly move his hand away from the white rat. Soon after that, Albert only reacted with a fearful, negative reaction when around the rat. Generalization, the same reaction present when a similar stimulus is presented, also occurred with other small animals such as a rabbit and a dog. It is important to note that the validity of this highly cited study has been questioned recently in that new evidence has shown that Albert was neurologically impaired (Bartlett, 2012). He died of hydrocephalus at the age of six and had never learned to talk or walk either. Therefore, current researchers and psychologists find it problematic to use this study as evidence of classical conditioning generating emotional responses. In Schunk's (2016) example of emotional conditioning in education, he mentions that kindergarteners' first days of schools can often be associated with fear and nerves. Therefore, he suggests touring the school before the actual school year starts as well as incorporate fun, calm activities on the first few days of schools so that positive emotions will be associated with going to school. The positive emotional responses will lead to positive emotions and attitudes towards school.

Contiguous Conditioning. Edwin R. Guthrie added to the body of behavioral studies when he theorized that learning takes place with associations through movements or acts, large-scale sets of movements (as cited in Schunk, 2016, p. 84). Schunk (2016) writes that "contiguity learning implies that a behavior in a situation will be repeated when that situation occurs" (p. 81). Guthrie went on to say that forgetting takes place when new learning triggers a response from a stimulus that is different from what that stimulus originally triggered (as cited in Schunk, 2016, p. 85). Schunk (2016) stated the following:

Although Guthrie did not suggest that people learn complex behaviors (e.g. solving equations, writing papers) by performing them once, he believed that initially one or more movements become associated. Repetition of a situation adds movements,

combines movements in to acts, and establishes the act under different environmental conditions.” (p. 84)

Guthrie believed that rewarding responses was not necessary in order to learn (as cited in Schunk, 2016, p. 85). The use of flash cards to associate multiplication facts with their answers as well as connecting a chemical symbol with its scientific name are just a couple of examples of contiguity in learning that is often seen in classrooms.

Another important aspect of Guthrie's contiguous conditioning is forming habits and change (as cited in Schunk, 2016, p. 85). He believed that habits were behaviors that have been associated with many cues. Schunk (2016) gave the example of linking desired school behaviors such as treating others with kindness to multiple cues such as the classroom, playground, and cafeteria. When the desired behavior is linked with the multiple cues, the many different locations, the behavior of showing kindness to others would become a habit. Guthrie also believed that punishment had no effect on changing undesirable behaviors (as cited in Schunk, 2016, p. 87). He believed that changing habits required “replacing them with desirable ones” (Schunk, 2016, p. 87). Although not all of Guthrie's theories are accepted today, contiguity is still prevalent in theories of learning today.

Operant Conditioning. One of the most well-known behaviorists with theories on learning is B. F. Skinner (Schunk, 2016). After studying and then theorizing operant condition, he later applied those ideas to education in his book *The Technology of Teaching*. B. F. Skinner wrote that children gain knowledge through the reinforcement of behaviors, not simply their experiences in an environment (Hueser, 1999). Other than newborn inherited behaviors such as crying and sucking, Skinner believed that all other behaviors in life are learned behaviors caused by a response to a stimulus. Much of his learning theory has been “discredited by current

learning theories because it cannot adequately explain higher-order thinking” (Schunk, 2016, p. 88). His ideas on operant conditioning continue to be used as a way of “enhancing student learning and behavior” (Schunk, 2016, p. 88).

Skinner defined learning as “the re-assortment of responses in a complex situation” and conditioning as “the strengthening of behavior which results from reinforcement” (as cited in Schunk, 2016, p. 89). A few of the basic processes of operant conditioning consist of “reinforcement, extinction, the Premack principle, punishment, schedules of reinforcement, generalization, and discrimination” (Schunk, 2016, p. 89). Reinforcement is strengthening a response or making the response “more likely to occur” (Schunk, 2016, p. 89). A reinforcer is when a stimulus followed by a response strengthens a response. It is extremely important to note that “because reinforcers are defined by their effects, they cannot be determined in advance” (Schunk, 2016, p. 90). The only way to determine if something is a reinforcer is to test it to see if it produces any effects. Skinner wrote that reinforcers can often be predictable in learning such as teacher praise, free time, privileges, and high grades (as cited in Schunk, 2016, p. 91). However, “one can never know for certain whether a consequence is reinforcing until it is presented after a response and we see whether behavior changes” (Schunk, 2016, p. 90).

Discriminative stimulus is often referred to as the ABC model (Schunk, 2016). An antecedent (discriminative stimulus) is followed by a behavior (response) which leads to a consequence (reinforcement). There are two different types of reinforcements: positive and negative. Positive reinforcement is when a stimulus is added following a response so that it will increase the likelihood of a particular response to a given situation. A negative reinforcement is different from a positive reinforcement in that instead of adding a stimulus, the stimulus is taken away following a response. Schunk gave the examples of loud noises, bright lights, and low

grades as negative reinforcement. Positive and negative reinforcement is often used in the classroom setting as a way to reinforce desirable school behaviors such as teacher praise, high grades, honors, and privileges. Extinction can occur when a response declines due to non-reinforcement (as cited in Schunk, 2016, p. 91). Schunk (2016) gave the example of a student that raises his or her hand in class but never gets called on will eventually stop raising his or her hand because the behavior was never reinforced with a response. Another common practice of operant conditioning in the school setting is the use of punishment. Skinner writes that punishment is taking away a positive or negative reinforcement following a response in order to “decrease the future likelihood of responding to a stimulus” (as cited in Schunk, 2016, p. 93). Punishment can “suppress a response but does not eliminate it” (Schunk, 2016, p. 93). This is seen when a punished response returns after the threat of punishment is no longer given. Some examples of common punishments in school settings are loss of privileges, being taken out of the classroom, receiving In-School Suspension or Out-of-School Suspension.

Shaping, or “learning by doing with corrective feedback” (Schunk, 2016, p. 98) is operant conditioning’s model for shaping behavior. In order to shape behavior, the following sequence should be followed:

Identify what the student can do now. Identify the desired behavior. Identify potential reinforcers in the student’s environment. Break the desired behavior into smaller subsets to be mastered sequentially. Move the student from the initial behavior to the desired behavior by successively reinforcing each approximation to the desired behavior.

(Schunk, 2016, p. 98)

Behavior modification is also a technique that has commonly been used in the classroom,

counseling settings, and even prisons for a variety of reasons including the treatment of disruptive behaviors (Becker, 1971; Ulrich, Stachnik, & Mabry, 1966). Behavior modification techniques include “reinforcement of desired behaviors and extinction of undesired ones” (Schunk, 2016, p. 100).

While the behaviorist views have often been challenged, especially by social cognitivists, being that internal events such as thoughts and feelings are not accounted for in their impact on learning and behavior, behaviorist principles are still widely used without having to side solely as a behaviorist (Schunk, 2016). Schunk (2016) gave the following as an example: “Establishing a conducive learning environment and reinforcing students for learning are desirable regardless of one’s theoretical perspective” (p. 101).

Social Cognitive Theory- Conceptual Framework for Learning

Social cognitivists have differing views on how learning takes places. Some important components of the social cognitive theory in contrast to the behaviorists’ views are their thoughts on the role of motivation, self-efficacy, and self-regulation practices on learning (Conner & Norman, 2005). Social cognitive theory (SCT) began in the 1970s with a change from looking at behavior to cognition (Schunk, 2016). Until Bandura’s *Social Learning Theory* which was published in 1977, researchers looked at how learning took place based on receiving consequences for behavior. However, SCT viewed cognition in having a major impact on motivation, actions, and thoughts. Bandura (1993) argued that “Trial and error learning [could be] shortcut through social modelling of knowledge and competencies” (p. 127). He defined social modelling as creating new behaviors through thought and not simply by what someone has seen or heard. He went on to state that “people are actors as well as products of their environment” (Bandura, 1993, p. 128). Bandura’s writings of the social cognitive theory viewed

that “individuals are self-organizing, proactive, and self-regulating” (Pajares, 2002, para. 2). In his studies on observational learning, Bandura found “people could learn new actions by observing others perform them” (Schunk, 2016, p. 117). Performing the actions and reinforcement was not necessary in order for an observer to learn. In contrast to Skinner’s model, Bandura believed that people do have control over their actions and thoughts and that people do not make changes in their actions simply through reinforcement (Pajares, 2002). Social cognitivists’ theorize that cognition, the mental action of gaining knowledge and understanding through thinking, is an important process in learned and recurring behaviors (Pajares, 2002). Pertaining to the cognitivists’ view, Hueser (1999) wrote “An event stimulates an individual in to another event such as storing new leaning into memory. In the future, similar events can cause an individual to remember the previous event of that type” (p. 56). So, where behaviorists believe that actions are all learned through a stimulus-response process, social cognitivists place an importance on behaviors and learning in the thinking process that takes place after a stimulus is presented (Hueser, 1999).

Reciprocal Interactions. Bandura (1986) wrote that human behavior was made up of reciprocal interactions between environmental variables, behaviors, and cognition. Those interactions can then be seen in a student’s perceived self-efficacy, people’s beliefs of their abilities to carry-out an action in order to learn or perform a behavior (Schunk, 2016). Schunk found that in the interaction of self-efficacy and behavior, self-efficacy can have a great influence on achievement in areas such as “Choice of tasks, persistence, effort expenditure, and skill acquisition” (as cited in Schunk, 2016, p. 119). As students make progress throughout their learning experience, it signifies to them that they are capable of learning and succeeding in that area. Therefore, their self-efficacy increases for continued learning (Schunk, 2016). Reciprocal

interactions can often be seen in the classroom (Schunk, 2016). Schunk (2016) gave the following example:

Students think about what the teacher is saying (environment influences cognition- a personal factor). Students who do not understand raise their hands to ask a question (cognition influences behavior). The teacher reviews the content (behavior influences environment). Eventually the teacher gives students work to accomplish (environment influences cognition, which influences behavior). As students work on the task, they believe they are performing it well (behavior influences cognition). They decide they like the task, ask the teacher if they can continue to work on it, and are allowed to do so (cognition influences behavior, which influences environment). (p. 119-120)

Enactive and Vicarious Learning. Social cognitivists believe that learning takes place either enactively or vicariously (Schunk, 2016). Enactive learning is learning “through actual doing” (Schunk, 2016, p. 120). Whereas, vicarious learning is learning that takes place by observing models perform (Schunk, 2016). Enactive learning can be learning by observing the consequences of a person’s actions. In contrast to other theories, SCT believes that behavioral consequences provide information and motivation. Schunk (2016) writes that “people strive to learn behaviors they value and believe they will have desirable consequences, whereas they avoid learning behaviors that are punished or otherwise not satisfying. People’s cognitions, rather than consequences, affect learning” (p. 121).

In contrast, vicarious learning is when a person does not perform during learning (Schunk, 2016). For example, a person can learn that it is unsafe to approach a wild animal while on an African safari through a website, book, or educational television show. It is not necessary for the person to actually go to Africa and experience the dangers and consequences of

approaching a lion in the wild. Sources of vicarious learning can be found in observing or listening to a live person (such as a key note speaker or teacher), observing or listening to a non-human or symbolic character (such as a cartoon character), through electronics (such as the internet or an e-text), or in print such as a textbook or periodical (Schunk, 2016). In 2012, Schunk wrote that complex skills are typically learned through a combination of performing and observing.

To go a step further, observational learning can often take place without reinforcement or a goal as well (Schunk, 2016). This is known as latent learning. Performance is impacted by reinforcement, not learning, and performance is impacted by a variety of factors such as motivation, incentives, interest, the need to perform, and social pressures.

Self-Regulation. Bandura (1986) wrote about the impact of self-regulation in learning. He stated the following:

Another distinctive feature of social cognitive theory is the central role it assigns to self-regulatory functions. People do not behave just to suit the preferences of others. Much of their behavior is motivated and regulated by internal standards and self-evaluative reactions to their own actions. (Bandura, 1986, p. 20)

Zimmerman, a leading researcher in the expansion of self-regulation in academics, defined self-regulation as “self-generated thoughts, feelings, and actions for attaining academic goals” (Zimmerman, 1998, p. 73). Self-regulatory practices such as self-monitoring and motivational beliefs such as self-efficacy and intrinsic interest are said to be predictive of academic success when used during studying (Schunk & Zimmerman, 1998). Students can exhibit self-regulatory learning processes such as paying attention to instruction, processing knowledge, working on memorizing information, and goals for learning outcomes (Schunk,

1989). Zimmerman also writes that in according to the social cognitive theory, "People must develop skills in regulating the motivational, affective, and social determinants of their intellectual functioning as well as the cognitive aspects" (as cited in Bandura, 1993, p. 136). Research has been conducted using the social cognitive theoretical framework to analyze self-regulation's role in students' academic success and learning growth.

In a study conducted by Zimmerman and Martinez Pons (1986), 80 tenth-grade high school students, 40 from a high-achievement track and 40 from a low-achievement track, were interviewed to get a glance of their self-regulation strategies used in either the classroom, on homework, or in study time. The researchers found that high self-regulated learners had greater achievement than low self-regulated learners, as measured by standardized achievement test scores. Therefore, social cognitivists argue that self-regulation plays an important role in academic growth and achievement.

Zimmerman later studied with Bandura and Martinez Pons (1992) and found that self-regulation skills in students provide the ability to withstand difficult and stressing seasons. In their study with high school students, they tested for the following self-efficacy abilities:

Structure environments conducive to learning, to plan and organize their academic activities, to use cognitive strategies to enhance understanding, to obtain information and get teachers and peers to help them when needed, to motivate themselves to do their school work, to get themselves to complete scholastic assignments within deadlines, and to stick to academic activities when there are more interesting things to do (as cited in Bandura, 1993, p. 136).

The researchers found that the greater the self-regulatory efficacy the greater their efficacy was to master their academic classes (Zimmerman, Bandura, & Martinez Pons, 1992).

They also discovered that “perceived efficacy promoted academic achievement both directly and by raising personal goals” (as cited in Bandura, 1993, p. 137). Parental goals and hopes for their students only had an indirect influence on academic achievement (Zimmerman et al., 1992). The researchers argued that parents should build self-efficacy in their children, not simply set academic goals and standards for them.

Pintrich and De Groot (1990) conducted a correlation study with 173 seventh-graders in science and English classrooms in a predominantly white, middle-class school district in Michigan. During the study, students answered the Motivated Strategies for Learning Questionnaire (MSLQ) on a seven-point Likert scale (Pintrich, Smith, Garcia, & McKeachie, 1991). The MSLQ included questions about motivation, using cognitive and metacognitive strategies, managing effort, self-efficacy, test anxiety, and use of learning strategies (Pintrich & De Groot, 1990). Classroom assignments were analyzed as performance data. Analysis of the MSLQ results showed a positive relationship between self-efficacy and student’s cognitive engagement and performance. Self-regulation, self-efficacy, and test anxiety were found to be the best predictors of academic performance. The researchers also discussed that “student involvement in self-regulated learning is closely tied to students’ efficacy beliefs about their capability to perform classrooms tasks and to their beliefs that these classroom tasks are interesting and worth learning” (Pintrich & De Groot, 1990, p. 38). However, those motivational beliefs are not directly connected with academic performance; self-regulation in learning seems to be a greater predictor for academic performance. Therefore, “Students need to have both the will and the skill to be successful in classrooms” (Pintrich & De Groot, 1990, p. 38).

Modeling Processes. Modeling is an extremely important aspect of the social cognitive theory (Schunk, 2016). It has been defined as the behavioral, emotional, and cognitive changes

that take place due to the observance of models (Zimmerman, 2013). The three functions of modeling are response facilitation, inhibition and disinhibition, and observational learning. Response facilitation is when a modeled action serves as a cue for an observer's actions. For example, if a student walks in to a classroom and observes the other students all standing in a particular area of the room, the modeled actions guide the observer to also go over to the specific corner of the room (Schunk, 2016). Chartrand and Bargh (1999) found that response facilitation can happen without conscious awareness by the observer; the observer simply copies those same behaviors and mannerisms that they observe in a social setting. This is also known as the chameleon effect.

When a person is punished for a particular action, inhibition occurs in the observer so that the observer either never attempts or stops those same actions (Schunk, 2016). When prohibited or threatening actions take place by a model and no negative consequences are given, then disinhibition, carrying out those same actions, could take place in the observer. This can be seen sometimes in the classroom if a teacher ignores or does not get on to students that are acting against classroom rules. Other students observe that negative consequences were not given to those students therefore leading to some observers displaying those same actions later.

Bandura (1986) wrote that there are four processes in observational learning: attention, retention, production, and motivation. It is essential that an observer is attentive to the event in order for modeling to take place (Schunk, 2016). A variety of things can encourage greater observer attention to the event such as task features like color, size, and sound as well as modeled activities that observers deem as important. For example, an observer will likely be more attentive to a teacher speaking because the observer often deems what the teacher is doing and saying as important. Also, teachers tend to use bright colors and creative visuals so that

observers are more likely to pay attention. Retention is the process of “cognitively organizing, rehearsing, coding, and transforming modeled information for storage in memory” (Schunk, 2016, p. 126). Production is the process of translating modeled actions in to an observers’ behavior. As mentioned earlier, complex skills are typically not learned solely through observation; however, with practice, feedback, and re-teaching those complex skills can be learned and perfected. Lastly, motivation is an extremely important process of observational learning because learners will often perform what they feel will produce rewarding results and avoid those actions that they feel will end in negative or unsatisfying results.

Cognitive Skill Learning. Teachers often model cognitive skills as a pedagogical practice in the classroom (Schunk, 2016). For example, a math teacher would describe the thinking that is taking place in their mind as they work through the steps of a math problem. Teachers will often model multiple cognitive skill strategies to target the different learning styles that are in the classroom. Research has shown that using cognitive modeling along with explanation has a positive impact on student learning verses just explanation alone (Rosenthal & Zimmerman, 1978; Schunk, 1981).

Influences on Learning and Performance. There are numerous factors that can influence and effect learning such as "developmental status, model prestige and competence, vicarious consequences, outcome expectations, goal setting, values, and self-efficacy" (Schunk, 2016, p. 131). Different stages of development typically improve individuals' attention spans, their capacity to use strategies and process new information, and learn from models (Schunk, 2016). Intrinsic motivation also grows with development which can be directly tied to learning. Wigfield and Eccles (2002) write that stages of development significantly impact learning. Self-regulation abilities and the ability to stay focused for longer periods of time

significantly increase with age (Wigfield & Eccles, 2002). Young children are often motivated by consequences that could arise from their actions; as children grow in maturation, their motivation is often directly tied to their goals and values (Bandura, 1986). Individuals are more likely to learn from models that they deem prestigious and competent (Schunk, 2016). For example, high school students could really listen and learn from individuals that had recently graduated and that had recently gone through experiences that current high school students are going through. As students relate to models, they can sometimes focus and learn more. Schunk (2016) states the following:

Vicarious consequences to models can affect observers' learning and performance of modeled actions. Students who observe models rewarded for their actions are more likely to attend to the models, rehearse and code their actions for retention, and be motivated to perform the same actions. (p. 133)

Bandura (1986) writes that vicarious consequences inform and motivate observers.

Summary. This study will use qualitative research questioning to gain insight on students' perceptions of what they consider as more of a punishment: a zero in the grade book without the opportunity to make up a missing assignment or a working lunch session where students are given the time and a quiet space to complete missing work. Although it could be assumed that a zero in the grade book would be seen as a punishment, students' responses will provide clarification on what students perceive as a punishment and a negative reinforcement. Being that the determination of a variable as a reinforcer is to test it to see if it produces any effects (Schunk, 2016), the researcher will analyze the quantitative data to determine if the zero in the grade book or the working lunch session actually impacts students' assignment completion

and achievement in mathematics. Further analysis of the theoretical framework will be discussed in the findings and discussion section.

Review of the Literature

Historical Context. Grades have consistently had an important place in America's educational system since the 1800s (Hirschenbaum, Simon, & Napier, 1971). Today, progress reports and report cards are still given multiple times throughout the school year to display student academic achievement, content mastery, and learning growth. Grades from those progress reports and report cards are analyzed by students, parents, teachers, and administrators to determine students' academic progress and abilities. However, research suggests that grading in many classrooms today is a hodgepodge of criteria ranging from student learning to behavior (Grimes, 2010). With variables such as student behavior, motivation, attendance, and teacher bias impacting students' grades, the validity of students' grades is in question. Many measurement experts agree that behaviors that are non-academic such as motivation, classroom behavior, and attendance should be evaluated separately from a student's grade; however, many teachers continue to include factors such as these in their grading practices (Canady & Hotchkiss, 1989). Because of the many issues that can arise from traditional grading practices, some school systems have even moved from a traditional grading style to a standards-based grading style that aims to better reflect student learning rather than other factors such as effort and behavior (Brookhart, 2011).

Grading in America's educational system has long been a topic of discussion for educators, researchers, parents, and students. Numerous articles and books concerning grading have been written. Studies concerning this topic have also been carried out dating back to the early 1900s (Hirschenbaum, Simon, & Napier, 1971). Some of the earliest studies concerning

grading were carried out by Starch and Elliott (1912, 1913a, 1913b). Starch and Elliott studied the assigned grades on English, history, and mathematics test papers of a variety of students. In their 1912 study of two English essays, they found wide variability in teachers' scoring of the same essays. The first essay's scores ranged from 64 to 98 points, and the second paper's scores ranged from 50 to 97. Starch and Elliott (1913a, 1913b) carried out the same sort of study, only this time they looked at the subjects of mathematics and history. The researchers again found that assigning percentage grades has a wide range of discrepancy.

With early 20th century research being conducted relating to variability in grading, Twerilliger (1966) later posed this question concerning grading: "What should be the primary basis for assignment of marks" (p. 33). Although this question was posed fifty years ago, it continues to be a pertinent question for America's educational system even today as the controversy of grading is still prevalent. Brookhart (2011) argues that today's educators continue to have conflicting and passionate viewpoints about what grades should reflect. Some argue that grades should simply reflect academic achievement, while others are proponents for grades to also reflect effort and motivation.

Rademacher (2000) states "Few topics in education are more controversial than grading, reporting, and communicating students' learning" (p. 151). In her article *Involving Students in Assignment Evaluation*, she writes about the evaluation of learning based on Guskey's writings in 1996. The writer states that the primary goal of reporting and grading is communication (Rademacher, 2000). The goal of that communication should be to provide important information to students and parents in an effective and easily understood method. Secondly, reporting where additional practice is necessary to improve skills is an extremely important part of the learning process. For example, if a low grade is given with no additional feedback on how

or why the student scored this along with areas of improvement, then the grade is really of no use to the student or the parent. Rademacher (2000) writes that teachers should really think through their assigning and evaluating practices. She writes that teachers should plan meaningful assignments that are aligned with the taught content and that are interesting assignments varied from the typical worksheet format. All pertinent information should clearly be articulated in the presentation of an assignment. Clear directions should be provided as well as time provided for students to ask any questions about the directions. Lastly, she writes that students should be “actively involved” in the evaluation process as it “empowers them and gives them control over their own learning” (Rademacher, 2000, p. 153).

Standards-Based Grading. One major change in the present historical evolution of grading has derived from educators questioning traditional grading practices (Brookhart, 2011). In traditional grading practices “one grade sums up achievement in a subject, and that one grade often includes effort and behavior” (Brookhart, 2011, p. 10). Some school systems have switched to a standards-based grading system as a means of ensuring the validity of grading practices taking place by all teachers in a district (Brookhart, 2011). In standards-based grading, there are typically several grades for one subject, and those grades sum up strictly achievement. Effort and behavior are then reported separately from the academic, standards-based report. “Standards-based grading is based on the principle that grades are not about what students earn; they are about what students learn” (Brookhart, 2011, p. 13) Once a school has decided that grades should strictly reflect achievement only, then teachers must find another way to deal with missing assignments other than counting a F or a zero (Brookhart, 2011).

Olson (1994) writes that some schools have converted to standards-based grading so that parents can have a better idea of what students understand or do not understand. Long checklists

of skills and subtopics take the place of one letter grade or percentage score on a broad subject such as reading. Standards-based grading is one way that systems have attempted to alleviate hodgepodge grading practices. However, this study will seek to find another way to validate grading practices while also determining if assignment completion rate and academic achievement can be affected through variables related to negative reinforcement and punishment.

Non-Achievement Criteria in Grading. The term hodgepodge grading was first used by Brookhart (1991). This terminology defined grading practices that used a combination of achievement, attitude, and motivation in the overall score of students. Cross and Frary (1999) carried out a study on behalf of a school district that was concerned with the current grading practices taking place in the schools, especially at the secondary level; the district was concerned that hodgepodge grading practices were prevalent in the schools. Three hundred and seven middle and high school teachers as well as 8664 middle and high school students participated in the anonymous survey. In the teacher survey, teachers were asked to “describe their actual grading practices, their opinions regarding testing and grading, and to identify their school level, teaching experience, and teaching field” (Cross & Frary, 1999, p. 55). In the student survey, students were asked about what teachers placed importance on concerning grading as well as students' satisfaction of grading practices currently taking place in their district. The results showed that 25% of teachers stated that grades would be raised for good effort, and 33% of students agreed that effort was considered by teachers in grading practices. An astounding 39% of teachers verified that non-academic factors such as conduct and attitude were considered in the overall grading of students. Seventy-one percent of students stated that they supported this practice, and 30-33% of their teachers incorporated these non-academic factors in their grading practices. These findings supported the notion that hodgepodge grading practices are prevalent

in secondary schools and that students are aware and relatively supportive of these practices despite its inconsistencies.

Randall and Engelhard (2009) conducted a study to examine the differences in grading practices of elementary versus middle grades teachers. A large metropolitan school district in the southeast was used as the participants in the study. In this district, the grading policy, “requires all teachers to assign grades based on student academic progress alone, as defined by the county’s content standards” (Randall & Engelhard, 2009, p. 176). The researchers analyzed 243 teachers’ responses to 53 generated scenarios in which teachers described students’ characteristics that could affect their grade such as student ability, achievement, effort, and behavior. The framework guiding the questionnaire for the study was developed using Guttman’s Facet Theory (Guttman, 1944). The study found significant discrepancies in elementary and middle school teachers’ grading. Elementary school teachers tended to give higher grades overall in comparison to middle grades teachers. The findings also concluded that non-academic behaviors, specifically behavior and effort, could potentially be linked to the differences in grading practices. “Middle grades teachers were more likely to punish misbehaving students with lower grades than were elementary school teachers” (Randall & Engelhard, 2009, p. 184). The findings that middle grades teachers were more likely to punish students with lower grades supports the need for the proposed research. Teachers are often looking for ways to better motivate students, even though that at times may mean punishment or negative reinforcement, this research will seek to look for ways to offer a better option in providing negative reinforcement to students to better motivate students to turn in assignments and in a timely fashion without jeopardizing the validity of students’ grades.

Morrow (2000) looked at the relationship between teachers' beliefs and attitudes about themselves and whether these perceptions had any influences on their attitudes and beliefs towards grading practices. After analyzing the results of the participating teachers on the 34-item questionnaire, 90% of teachers stated that "effort should be a mitigating factor when a student is trying very hard and has low academic ability" (Morrow, 2000, p. 100). In these situations, teachers felt that the students' effort and performance should be considered when determining a grade.

Social and Cultural Context. "What meaning do we want our grades to convey?" (Brookhart, 2011, p. 10). This is an ongoing, extremely important question that educators across the United States are asking themselves. Olson (1995) stated the following:

At issue is one of the most sacred traditions in American education: the use of letter grades to denote student achievement. The truth is that letter grades have acquired an almost cult-like importance in American schools. They are the primary, shorthand tool for communicating to parents how children are faring. Without them, there would be no honor rolls or class valedictorian. Schools use letter grades to signal whether children have mastered their subjects, to select groups for educational courses and programs, to motivate and reward students, and to help youngsters and their parents understand where performance needs to be improved. Yet, across the country, principals and teachers are taking another look at student report cards for a variety of practical and philosophical reasons. (p. 24)

As stated by Olson (1995), grades play an extremely important role in the culture of schools and families. Along with displaying learning mastery, home dynamics will often times reward good grades with a variety of positive reinforcements like money, a desired toy, or a

night on the town to the student's choice (Olson, 1995). With grades playing such an important role in schools and homes, it is extremely important for schools and educators to ensure that valid and fair grading practices are taking place. Numerous educators continue to use zeros as a punishment in hopes that it will encourage future student motivation and self-regulation to complete and turn in assignments on time. However, very little research exists to validate that theory. Also, with the implementation of zeros in grading practices, how are parents and students able to recognize successful or insufficient learning? Therefore, it is essential that research takes place to determine if using grading as a punishment is a valid technique to increase student motivation.

Punishment. Punishment has also played an interesting role in the culture of schools and homes. For centuries, corporal punishment, or paddling, was used as a means of aligning behavior and motivation with teachers' expectations (Cryan & Smith, 1981). Over time, the use of this type of punishment has largely been eliminated due to the perception that students' human rights were being violated as well as state lawmakers making state-mandates against the presence of corporal punishment in schools (John & MacNaughton, 1990). Therefore, schools have sought other means of punishment in lieu of corporal punishment such as In-School Suspension, loss of recess time, or even as a zero in the grade book (John & MacNaughton, 1990).

Punishment can also be used in the home concerning students' grades. Not only have schools used punishment, but parents have also used this technique when students have underperformed the parents' expectations on a report card. Parents will sometimes use punishment as a means of trying to get their child to bring the grade up for the next quarter without truly knowing if this use of punishment will in fact make a difference in their students' academic progress. With schools and parents using punishment for a variety of reasons including grading, it is essential to

understand the best practices that will actually impact student motivation while also validating the grading practices taking place.

Adolescent Learning. In addition to the cultural status that grading has in schools, homes, and families, adolescent education continues to be an area of concern with school districts across the nation. There is an increasing trend in adolescent education for lower performing test scores, increased attendance issues, and increased behavioral reprimands such as suspensions (Pardini, 2002). All of these provide evidence to the idea that motivation in adolescent students is declining. Therefore, teachers of adolescent students constantly have to look for ways to motivate their students to learn and engage in school work, the classroom, as well as completing classroom assignments according to the teacher's and state's expectations. Dyrness and Dyrness (2008) even go as far as to say that "implicit in a teacher's charter should be to cultivate and promote self-esteem by teaching students how to be successful" (p. 114). Students' motivation and self-esteem can be influenced by their grades because they feel that it reflects their achievement and their ability to learn (Dyrness & Dyrness, 2008). Therefore, the authors argue that it is imperative for educators to use grading practices that accurately reflect student achievement because using grading as a behavioral motivator is a mistake.

Along with a decline in academic motivation, organizational skills and environmental changes in middle grades has an impact on students' school successes and academic growth. The transition from elementary to middle school is particularly a significant influential factor in a decline in students' organizational skills (Evans, Serpell, & White, 2005). There are numerous environmental changes that have an effect on adolescent development and their learning (Evans, Allen, Moore, & Strauss, 2005). For instance, the change in class schedules from one primary teacher to multiple teachers in a day, more demanding academics, as well as the importance of

peer relations all play a part in environmental changes that effect adolescent learners (Evans et al., 2005). Students are expected to keep their school materials organized as well as independently complete class assignments whether during class or at home (Evans, Serpell, & White, 2005). Due to the high number of students that teachers see in a week, often at least 150 students, teachers are unable to closely monitor how or if students are organizing their materials as well as managing their assignment completion (Evans, Langberg, Raggi, Allen, & Buvinger, 2005).

Along with greater independence, greater cognitive demands also characterize this time frame in adolescent development (DuPaul & Stoner, 2003). These environmental changes as well as the biological changes taking place in students at this time impact adolescents in their learning, development, and practices as a student. In addition, behaviors like procrastination become an issue during this phase. Procrastination in combination with organizational issues and teachers expecting student independence can easily lead to students missing assignments. These missing assignments can either be because it does not get completed, or the assignment gets lost. Intervention tools to help with organizational issues have been created and studied particularly with students with ADHD. One intervention tool named HOPS, Homework, Organization, and Planning Skills, has been studied several times in students with ADHD. During one study, students attended an after school program two days a week where undergraduate psychology students taught students the following:

Develop and maintain systems of school materials organization for school binders, book bags, and lockers. Participants were also taught how to accurately record homework assignments and tests in a planner and to plan for long-term projects and tests by

breaking tasks in to smaller, more manageable, components. (Langberg, Epstein, Urbanowicz, & Graham, 2008, p. 117)

In this HOPS study, 72% of students were recording assignments and tests for all core academic classes in comparison to only 21% of students in a waitlisted control group (Langberg et al., 2008).

Another study was conducted using HOPS (Langberg, Vaughn, Williamson, Epstein, Girio-Herrera, & Becker, 2011). However, this time the HOPS intervention was implemented in a school setting where the on-site school counselors taught and implemented the organizational intervention tool. The study was conducted using schools in three different districts. Although the study did look at adolescent learners, a limitation in the methodology of the study is that it looked specifically at students with attention-deficit hyperactivity disorder, ADHD. This study found that organizational skills increased as measured by a checklist where students showed improvement in keeping their lockers, binders, and book bags organized during the intervention period. While this study found higher ratings in parents' perceptions of organizational skills, assignment recording, and homework completion in their adolescent students, there were no significant increases in teachers' ratings. This could be due to the fact that teachers may not observe some of the variables measured in the study such as the organization of students' lockers and whether students record classwork and homework assignments. One of the greatest factors that teachers do observe daily is assignment completion. The researcher encouraged an intervention for missing assignments as an addition to the HOPS for later study. If additional research using HOPS did not find it having an impact on assignment completion, then further research should be completed to determine what an effective intervention for assignment completion could look like.

Assignment Completion. Assignment completion rates tend to decline as a result of the decline in the motivation to learn and the struggle with organizational skills in adolescent students. As mentioned in the study by Langberg, Vaughn, Williamson, Epstein, Girio-Herrera, & Becker (2011), teachers of adolescents observe the incompleteness of assignments more than they do organized materials and recording of assignments and tests. Therefore, some research has been done to identify intervention tools to help increase assignment completion in students; however, many of these studies have been conducted with elementary or high school students or in particular sets of middle school students, particularly looking at students with learning and attention issues such as attention deficit hyperactivity disorder, emotional and behavioral disorders, or at-risk of failing.

For instance, one study looked at the use of self-management and parental involvement as an intervention to help increase mathematics homework completion in students with emotional and behavioral disorders, EBD, that were at-risk of failing (Cancio, West, & Young, 2004). Parents were trained to use a homework completion program where students were taught self-managing techniques and parents participated in homework completion. Parents kept up with a homework notebook while students kept up with a homework folder. Rewards also played an important role in this study. Students were rewarded, or reinforced, by parents or teachers for completing homework assignments and turning in parent checklists. The rewards ranged from items such as canned cokes, candy bars, school supplies, to even gift certificates. The findings reported increases in homework completion, homework accuracy, and academic achievement in all six students that were followed in the study.

Fearrington, McCallum, and Skinner (2011) conducted a study that looked at Solution-Focused Brief Counseling, SFBC, as an intervention to increase mathematics assignment

completion and accuracy in six fifth-grade students that were failing. During the 11-week study, six participants worked with an experimenter using the SFBC steps to complete each classroom and homework assignment. The participants and experimenter used the following steps in the SFBC to complete their work:

First, the experimenter asked the student to rate the severity of the problem on a scale of 1-10 (i.e., self-evaluation) and to describe what needed to happen to achieve an improvement of at least 10% by the following week. In the second step, the student was asked the miracle question. Specifically, the experimenter asked the student to pretend that a miracle occurred, the problem was solved, and then asked them to envision how their life would be improved. This technique encourages the client to develop concrete outcomes associated with solving their problems, thereby motivating clients to engage in activities designed to solve the problem. Step three involved using the cheerleading and positive blame techniques as the student and experimenter discussed the problem and possible solutions. When cheerleading, the experimenter actively encourages and praises the student's attempts to continue to do what is working. Positive blame involves asking the student to identify something positive that they accomplished and describe how they managed to achieve the accomplishment. During the fourth step, the experimenter flagged the minefield by asking the student to identify potential obstacles and barriers that might prevent them from achieving their goal and to generate strategies to address these barriers. Finally, as SFBC sessions were ending the experimenter gave the student a written message typically containing at least three compliments and a bridging statement to the tasks the student should do to achieve their goal. (Fearrington, McCallum, & Skinner, 2011, p. 67)

After the implementation of the SFBC as an intervention tool, there were increases in the participating students' mathematics assignment completion. It also found that even though the SFBC is typically used in mental health settings for social and emotional problems, it can be a useful intervention tool for underachieving elementary students to increase assignment completion.

One study looked at the use of Organizational Skills Instruction, OSI, and the Organizational Skills Form, OSF, as an intervention tool for middle school behaviorally challenged students (Anderson, Munk, Young, Conley, & Caldarella, 2008). During the study, students were explicitly taught organizational techniques, something that often times is a significant struggle for students with ADHD. The participating students completed four phases to help encourage their organization skills, which would hopefully in turn increase their assignment completion. In phase one, students were taught how to use the self-monitoring form. Phase two consisted of students taking and completing the OSF form in their most difficult academic classes. The students received teacher verification of their OSF in the third phase. Phase four consisted of setting goals and creating behavioral contracts. In addition to the use of the OSI and OSF intervention, students received positive reinforcement throughout the study which included verbal praise or a reward such as a treat. The rewards started with simply bringing the OSF to class. Next, a reward was given only if the form was actually completed. Later, rewards were given for actual assignment completion and a teacher's signature. Verbal praise and feedback were given to students throughout the entire study. Also, students were explicitly taught the OSI eight-part lessons in a life skills class that met three days a week. Data from the study found that the participating students were able to "accurately monitor their academic performance and improve their grades in academic classes" (Anderson et al., 2008, p.

12). However, the authors pointed out that over the course of the year-long study, students needed more than just explicit instruction in self-monitoring and completing forms in order to make academic progress. The researchers made “changes to the OSI intervention to help the students assume greater responsibility for their learning, develop effective work habits, and deal more positively with adverse events” (Anderson et al., 2008, p. 12).

Another study looked at middle school students that struggled academically as well as with assignment completion (Ness, Sohlberg, & Albin, 2011). The participants in the study consisted of students with a wide range of educational and behavioral needs in a resource classroom. An organization system was taught and expected to be used in the resource classroom. Being explicitly taught the organizational system had a positive effect on assignment completion; however, the researchers point out that further research should be done to determine the longevity of the assignment completion post intervention.

Hinton and Kern (1999) conducted a study to determine if an intervention of adding topics of high interest to students' homework assignments could have an impact on homework assignment completion. The design for this intervention was originally evaluated in a study by Dunlap, Kern-Durnal, Clarke, and Robbins in 1991. In Hinton and Kern's antecedent control strategies study, twenty-two regular education fifth-grade students at an inner-city middle school in Philadelphia participated in the intervention of receiving student interest in their homework assignments after the completion of a homework assignment on time and with at least 75% accuracy. After turning in the first assignment on time, the scenarios in the homework assignments were altered to include actual students' names and even locations in the community as students continued to turn in homework assignments on time. Before the intervention, the homework completion rate was 59%. After the implementation of students' interests in the

homework scenarios, the rate had increased to 96%. After the withdrawal of the intervention, the rate dropped back down to 61% and then moved back up to 93% when the intervention was reintroduced. The study also found the following anecdotal observations: teacher's found greater class participation and fewer discipline problems, students seemed eager for homework assignments, and some students even asked for extra credit work. While the data showed increases in homework completion, the study did not evaluate the intervention's effectiveness on homework accuracy. Therefore, the researchers encouraged further research to be done to determine the interventions impact on accuracy. Also, the researchers discussed how time-consuming the intervention was on school staff. They stated "when large numbers of students engage in undesirable behavior, it may not be feasible for teachers to implement individualized interventions" (Hinton & Kern, 1999, p. 232). They stated that in order for this to be a practical intervention in the everyday classroom, each participating school would need to develop a prototype that would only require minor changes for each student.

Another middle school study also looked at the use of incorporating students' interests in the curriculum assignments (Clarke et al., 1995). The goal of this intervention tool was to determine its effectiveness on reducing disruptive behaviors. Four middle students with a range of diagnoses including autism, severe emotional disturbance, and attention-deficit hyperactivity disorder, ADHD, were involved during the study. While assignment completion was not an initial variable to be measured in the design of the study, assignment completion was "identified as a principal concern for each student during the referral phase and because it is a prominent concern in school environments" (Clarke et al., 1995, p. 234). Throughout the study, the standards in the classroom assignments remained the same as other students in the school and grade level; however, their assignments included students' interests such as Teenage Mutant

Ninja Turtles. When students' interests were incorporated in the assignments, disruptive behaviors decreased to a third of the baseline, and assignment completion increased in three out of four of the students.

Bembenutty (2005) designed a study to examine the roles of self-regulation and motivation in predicting homework completion in college students. The 58 participating college freshmen completed a questionnaire about their motivation for learning math, use of learning strategies, and use of self-regulation. Students also kept up with four homework logs over the two-week study period. The researcher found that students that had a high self-efficacy completed mathematics homework because they wanted to learn and master the mathematics content. The students that completed their homework assignments reported that they used a variety of effective self-regulation strategies and were willing to delay gratification in order to achieve their academic goals. They were more motivated to complete their assignments, as measured by their high self-efficacy and intrinsic interest. Also, the students that completed their homework received higher grades overall than students that did not complete the homework assignments. Overall, the study revealed that self-regulated learners with high self-efficacy are more proactive in completing homework. While the findings from this study provided interesting evidence about predicting homework completion in particular learners, the findings were limited to college students. Also, the study did not discuss an intervention for students that have low self-efficacy and self-regulation to help with homework completion. However, the researcher did suggest the use of a homework log with students as a means of identifying struggling students so that an intervention can be designed to meet their needs. He also writes that teachers should be trained in self-regulatory learning strategies so that they can teach and model self-regulation in the classroom such as Bandura (1997) suggested in his writings.

Working Lunch Sessions. This study will look at the impact of a working lunch session in lieu of a zero in the grade book on students' assignment completion rate and academic achievement in mathematics. Because a working lunch session will be utilized in this study, it is important to take a look at the research that has already been conducted pertaining to the use and impact of a working lunch session on students. However, very little research has been done on the impact and effectiveness of a working lunch session. Also, the language in those studies related a working lunch session as a detention. This language could sway students' perceptions of the intervention tool as being strictly a punishment. Therefore, it is important to note this distinction before looking at the research related to a working lunch session.

Fluke, Olson, and Peterson (2014) write that a lunch detention can be seen as an "opportunity to provide educational supports" (p. 3). The writers suggest that a working lunch detention time can be utilized as a time to complete school work and also as a time for tutoring. However, in order for this to be done successfully, a qualified and effective staff member should be supervising the detention.

One study looked at the effect of a lunch detention in lieu of an In School Suspension, ISS, or Out of School, OSS, program on the frequencies of suspensions in ninth through 12th grade students at a high school in a southern state in the United States (Andrews, Taylor, Martin, & Slate, 1998). The study also looked at the school community's perception of the lunch detention as an alternative to OSS. Data from the first two six weeks of each of the school's 1995-1996 semesters were analyzed. In the first and second weeks, students sat in an after school detention. In the fourth and fifth weeks, students sat in a lunch detention. Data from the number of assigned detentions and the number of students receiving ISS or OSS for not serving the detentions were analyzed along with an open-ended survey questionnaire that was used to

identify the school personnel and students' perceptions. There was a statistically significant lower number of students that did not show for the lunch detention verses the after school detention. In addition, the lunch detention served as an alternative discipline that actually lowered the number of suspensions. Also, the qualitative questionnaire data found that students and school personnel preferred the lunch detention over the after school detention; one of the overwhelming trends for this preference was because it accommodated with students and teachers already set school schedules instead of having to use time after school that students and teachers are typically out of the building. An important thing to note about this study is that there were further consequences for students that did not show up to the assigned detentions. As a result of the punishment for not showing up to after school detention, 687 days of class were missed by students that were assigned ISS or OSS for not showing up to detention.

The only other scholarly reviewed article on the use of a working lunch detention as an alternative disciplinary form is from Clements, McKernan, and Call (1986). In their article, the authors discuss the use of a Structure Lunch Period, SLP, in lieu of corporal punishment or In-School and Out-of-School suspension. In their discussion of a successfully implemented SLP program, they write that it is essential to utilize appropriate personnel in the SLP setting. In their case, a male teacher with five years of experience and with high regard for classroom and behavior management was placed as the SLP facilitator. The teacher was trained on the SLP system and procedures for operation. A classroom away from the school lunch crowd was designated as the SLP location. Also, all school personnel were trained to use the SLP referral form. Students signed off on behavior expectations and procedures while in the SLP. Those behaviors included: all communication, including gestures, was not allowed, students had to sit facing forward with feet on the floor, all books and paper had to remain under the desks, resting

head on the desk or sleep was prohibited, eating lunch had to be done with minimal noise, and unnecessary motion was not allowed. Up to 40 students were in attendance of the SLP at times. Typically, students would finish lunch in approximately five minutes, leaving twenty minutes with students having nothing to do other than face the front of the room and stay quiet. The researchers found that the SLP was a successful discipline tool and was accepted by parents with little to no complaints. Students reported that they preferred the SLP over having to have an “embarrassing phone call home” (Clements, McKernan, & Call, 1986, p. 159). Overall, the study found that the SLP was as follows:

Useful where teachers feel that they have lost responsibility for classroom control; where corporal punishment is on the wane as a disciplinary action; where after school detention is unavailable because of busing; and where school discipline has become costly in terms of the need for additional personnel. (Clements, McKernan, & Call, 1986, p. 159)

Summary

Motivation in school and the desire to learn declines for many students during the adolescent years of development. A decline in motivation can be seen in falling grades and not turning in assignments on time, or in some cases at all. Teachers of adolescent students are constantly looking for ways to help motivate their students in an attempt to help students turn in classroom or homework assignments when expected as well as help in their academic achievement growth. Although many teachers agree that grades should reflect what students know, educators across the nation are using hodgepodge grading practices where zeros are included in students' grades even though it is a reflection of a behavior issue and not a learning problem. Although research has been conducted to identify interventions to help organizational skills and assignment completion in adolescent students, the studies have looked primarily at

students with disorders such as ADHD, EBD, students at-risk of failing, or in resource classrooms. Also, a great deal of research has only looked at homework completion verses assignment completion as a whole. Therefore, further research should be conducted to identify successful interventions that can be used in general education classrooms to encourage classroom assignment completion, whether assigned as classroom work or as homework, in adolescent learners. Also, no research has been conducted on the use of a working lunch session as a motivational tool rather than a punishment. In the existing research pertaining to the use of a working lunch session in adolescents, the working lunch session is used as a form of detention and not an intervention. Therefore, utilizing a working lunch session as an assignment completion intervention tool and as a means of attempting to increase academic achievement should be researched.

CHAPTER THREE: METHODOLOGY

This study was designed to evaluate the outcome of using the common practice of assigning zeros in the grade book and whether a working lunch session with the opportunity to make up a missing assignment is a more valid and effective strategy in increasing student academic achievement and on-time assignment completion in mathematics. This section describes the methodology used to carry out the study. An overview of the study, the participants and setting, data collection process, and the procedures used for data analysis are discussed in this chapter.

Questions and Hypotheses

It is important to revisit the goals of this study through the lens of the research questions. The goals of this study were to look at two things: 1) Whether a working lunch session in lieu of a zero in the grade book could better motivate adolescent students to complete mathematics assignments on time and 2) Whether a working lunch session instead of a zero in the grade book could have a greater impact on adolescent academic achievement in mathematics. With those goals in mind, the two quantitative research questions and corresponding sub-question and hypotheses were created as follows:

1. A. Is there a significant increase in the mathematics assignment completion rate when a working lunch session is given for missing assignments verses a zero in the grade book?

Hypothesis 1: A statistically significant increase is present in the mathematics assignment completion rate when a working lunch session is given for missing assignments verses a zero in the grade book.

Null Hypothesis: A statistically significant increase is not present in mathematics assignment completion rate when a working lunch session is given for missing assignments verses a zero in the grade book.

B. Is there a significant increase in the mathematics assignment completion rate between sexes when a working lunch session is given for missing assignments verses a zero in the grade book?

Hypothesis 1: A statistically significant increase is present in the mathematics assignment completion rate between sexes when a working lunch session is given for missing assignments verses a zero in the grade book.

Null Hypothesis: A statistically significant increase is not present in mathematics assignment completion rate between sexes when a working lunch session is given for missing assignments verses a zero in the grade book.

2. Is there a significant increase in student academic achievement in mathematics when students are given a working lunch session for missing assignments verses a zero in the grade book?

Hypothesis 1: A statistically significant increase will be present in students' performance on a mathematics summative assessment after students are given a working lunch session for missing assignments verses a zero in the grade book.

Null Hypothesis: A statistically significant increase will not be present in students' performance on a mathematics summative assessment after students are given a working lunch session for missing assignments verses a zero in the grade book.

The four qualitative research questions are as follows:

1. How do adolescents view a zero in the grade book without a makeup opportunity?

2. How do adolescents view a working lunch with an opportunity to make up a missing assignment?
3. How do adolescent students view punishments and negative reinforcers in helping motivate them to complete mathematics assignments on time?
4. In what ways did adolescent students' views of the zero in the grade book versus a working lunch session change over time?

Design

A pretest and posttest design study was carried out to evaluate pretest, mid-test, and posttest assessment scores of seventh grade mathematics students in a Title I North Georgia middle school where the students underwent two research phases. During the first four-and-a-half weeks phase, students that did not complete a mathematics assignment on time were given a zero in the grade book without the opportunity to make up the grade and missing assignment. It is extremely important to note that these math assignments could either be classroom assignments that were not finished during classroom time or work assigned as homework. At the participating school, any assignments that were not completed during that class period became a homework assignment, and students were expected to bring the completed work back to school the following day. The assigning of zeros is a common practice exhibited in hodgepodge grading that is often used in schools across the United States (Grimes, 2010). In the second nine weeks research phase, students that did not turn in a mathematics assignment on time or at all sat through a quiet working lunch session where they had the opportunity to complete and make up the missing assignment. Students sat through the intervention, the working lunch session, every day until the assignment was completed and turned in. In addition to looking at pretest, mid-test, and posttest scores, the assignment completion rate was also analyzed to determine if a working

lunch session better motivated students to complete mathematics assignments on time verses a zero in the grade book.

The researcher was a middle school teacher for eight years. She experienced a significant issue with assignment completion in her own classroom. As a member of her school's leadership team, she heard numerous accounts of assignment completion being a major issue school wide as well. Anecdotal stories from veteran adolescent teachers stated that assignment completion had been an ongoing issue for middle school students, particularly male students. Therefore, the researcher wanted to look at assignment completion overall and by sex as well to determine if a working lunch session could impact assignment completion more with males or females. She also felt that qualitative interviews could give greater insight in to the variables being analyzed in the study.

Participants

This study was targeted toward adolescent students in the United States. Convenience sampling of middle school students was chosen for the study so that familiarity and proximity for the researcher was present. Random assignment of subjects to groups was not done in this study, but rather six already created mathematics classes were used as the participants in the study. Because of the researcher's familiarity with her workplace's school's schedule, the study's population of participants was able to be designed to include six, seventh grade mathematics classrooms that were taught by two different teachers. Four of one teacher's classes were used as participants in the study while two of the other teacher's classes were used. Two classes could only be used with one teacher's sets of classes because her other classes were sixth and eighth grade classes. Both classroom teachers taught the same Georgia Standards of Excellence and content during the study's phases.

The sample of seventh grade students came from a North Georgia Title I school with approximately 750 students. Approximately 75% of students at the school received free or reduced lunch, and there was a high transient population. The demographics of the students based on the 2016-2017 school year enrollments were approximately as follows: 84% Caucasian, 6% African American, 7% Hispanic, 2% Asian, and less than 1% Native Hawaiian or Pacific Islander. Although all 125 students in the participating classrooms participated in the research phases, only 68 students, 31 male and 37 female, turned in parental consent forms and student consent forms for their data to be used in the data set. Because there can be a threat to the internal validity of a study, the researcher used homogenous groups that included only regular education students in non-co-taught environments.

Setting

The study was conducted in a Title I middle school in Northwest Georgia. This middle school was chosen because of convenience for the researcher. The researcher felt that the choice of one location in close proximity to her could ensure greater fidelity in carrying out the study so that useful data was produced. The setting was also fitting for the study due to the large number of students that have an issue with assignment completion. In a one-question Google Form survey, 50% of teachers in the school reported that a range of 60% to 90% of students did not complete assignments on time. Therefore, assignment completion was definitely a problem for this school. The participating middle school was made up of sixth through eighth grade students. The school was led by one male principal, one male assistant principal, and one female assistant principal. Two female teachers that had both taught middle grades mathematics for over five years were the participating educators.

Six, seventh grade classrooms between two different teachers were the setting for the study. The classrooms consisted of general education, non-inclusion students ranging in ages from 12 to 14. All of the class sizes consisted of less than 30 students. All the 125 students in the six participating classrooms participated in the study changes; however, only the students that turned in their written consent as well as the signed permission forms from their parent or guardian were used in the data set.

Instrumentation

The goals of this study were to evaluate whether a working lunch session in lieu of a zero in the grade book could better motivate adolescent students to complete assignments on time as measured by the assignment completion rate of students and if a working lunch session instead of a zero in the grade book could have a greater impact on academic achievement as measured by pretests, mid-tests, and posttests. Pretests, mid-tests, and posttests were used so that the researcher could look at gains in students' scores after the content had been taught to students as well as after they had the opportunity to practice those skills through assignment completion. A summative, standards-based assessment containing 80 multiple-choice questions was collaboratively created by the two participating mathematics teachers (see Appendix M). The content of the test came from the seventh grade mathematics school-wide curriculum map that determined the Georgia Standards of Excellence in Mathematics to be covered during the 13-week time period. Standards 7RP, 7RPA1, 7RPA2, 7RPA3, MGSE7.RP, MGSE7.RP.1, MGSE7.RP.2, MGSE7.RP.3, MGSE7.EE, MGSE7.EE.A.2, MGSE7.EE.2, 7G, 7GA1, MSE7G, and MSE7G1 were taught during the first research phase and were covered in questions one through 19 and 21 on the summative assessment. Standards 7.G.B.4, 7.G.B.5, 7.G.B.6, MGSE7.G.4, MGSE7.G.5, MGSE7.G.6, MGSE7.SP, MGSE7.SP.1, MGSE7.SP.2,

MGSE7.SP.3, MGSE7.SP.4, MGSE7.SP.5, MGSE7.SP.6, MGSE7.SP.7, MGSE7.SP.8, 7.SP, 7.SP.A.1, 7.SP.A.2, 7.SP.B. 3, 7.SP.B.4, 7.SP.C.5, 7.SP.C.6, 7.SP.C.7, 7.SP.C.8 were taught during the second research phase and were covered in questions 20 and 22 through 80 on the summative assessment. The assessment was designed by the participating mathematics teachers while using their professional experience and judgment in the choice of questions being administered to students. The participating teachers used Edulastic, an online assessment generator, to create the assessment. Edulastic is aligned with Common Core State Standards and gives teachers the option to generate their own questions or choose already created questions from an assessment library made by other teaching professionals (Edulastic, 2018). The standard-aligned questions were designed in a standardized test format that helps prepare students for types of questioning that would be covered on end of grade standardized assessments. Edulastic assessments could be completed online or printed and completed by hand in the classroom. When completing an assessment using Edulastic online, reports could be generated that displayed students overall achievement as well as individual item proficiency. The researcher felt that the use of multiple-choice questions and some short response questions in the assessment was the best type of questioning to use because it took out teacher subjectivity that could happen in grading practices with different types of questioning such as constructed response. The assessment was found to be reliable with a calculated Cronbach's Alpha higher than .75 (20 items in the first research phase, $\alpha = .85$; 60 items in the second research phase, $\alpha = .97$).

Procedures

Before the study began, the researcher received permission by the Institutional Review Board of Kennesaw State University. Once this permission was granted, the researcher

introduced the concept of the study to two of the seventh grade mathematics teachers at the participating school, and both teachers showed interest in participating. After having the two teachers sign-on to being participating teachers in the study, the researcher provided training to the teachers on the purpose of the study as well as the design and guidelines of the study. Once the teachers understood this, the researcher then introduced the study to the students by giving the students an explanation of why the study was taking place, why they were being chosen as possible participants, and a brief synopsis of the study procedures. Students were notified that their names and identifying information would not be used in the study. Once the students received information about the study, they were then given the opportunity to assent to their data being used in the data set. The researcher then sent home letters to parents or guardians letting them know of the research that was taking place so that parental or guardian consent for their students' data to be used in the data set could be given.

The first phase of the data collection procedures began by the researcher providing specific guidelines for the implementation of the study. Once the teachers were given a thorough understanding of the study guidelines, they began the implementation of the study. The researcher conducted six separate interviews, two female students and four male students, to gain insight as to what they considered more of a punishment, a working lunch session with the potential to turn in a late assignment or a zero in the grade book without the potential to turn in a late assignment. The interviews also looked in to students' perceptions of motivational and self-regulatory factors that increase these attributes in their age group. The students interviewed were chosen by recommendations from the participating teachers. Since the study wanted to look at assignment completion and achievement in mathematics, the researcher asked for recommendations by the teachers of students that had a history of not turning in assignments on

time or having missing assignments that were never completed. Both the researcher and the participating teachers felt that these students would be good interview candidates as they would have personal experience in struggling with assignment completion and could therefore give greater insight in to what was being measured in this study. During the research study, the students that were interviewed had a range of missing assignments during the two research phases. Three of the students had a zero during the first research phase and no missing assignments at all during the second research phase. One student had three zeros in the first phase and had to sit in a working lunch session ten times for not turning in assignments on time. Another student had one zero during the first research phase and sat in a working lunch session seven times in order to complete missing assignments. The other interviewed student did not having any missing assignments during either research phase. It is important to note that during the interviews, students were not asked to define negative reinforcement or punishment. The researcher analyzed themes from the interviewees' comments to determine what constituted a negative reinforcement or punishment from the students' points of view.

Once the interviews were conducted, the mathematics classes officially began the first research phase by completing the pretest. During this phase of the study, the classes functioned with normal, everyday procedures in the first four-and-a-half weeks of the school's third nine-week term. However, when students did not turn in assignments, they were given a zero in the grade book without the opportunity to turn in the assignment at a later time. The assignments ranged from class room assignments that were to be completed during that class period and other assignments that were assigned as homework. Typically, the participating teachers would assign a homework assignment once a week. However, any time a classroom assignment was not completed during that class period, it became an assignment for students to complete that night at

home, and teachers had the expectation for students to bring the completed work back to class the following day. The data from the first four-and-a-half weeks then became the baseline data. It is important to note that student absences were not taken in to consideration, and students were given the required amount of days to turn in any missing assignments according to the school system's handbook. This states that for every day that a student is absent, he or she is given the same number of days to make up the work. So if a student was absent two days and did not turn in assignments that were due during that two day window, then the student had two days upon returning to school to turn in those assignments. Grades were posted in Infinite Campus, the school system's online grading database, throughout the entire study. The numbers of zeros that students acquired during this four-and-a-half week period were recorded on a private Google Sheet created by the researcher. At the end of this four-and-a-half week period, students completed the mid-assessment.

In the following nine treatment weeks of the study, classroom procedures continued as normal. However, in this treatment phase of the study, the teachers no longer gave a zero in the grade book for missing assignments. In lieu of the zero in the grade book, students were assigned the intervention, a 25-minute working lunch session. During this time, students were given the opportunity to work in a quiet environment to complete the missing assignment while eating their lunch. A seventh grade teacher sat in the lunch session each day to ensure that the environment was a quiet space for students to focus and to provide any academic assistance if needed. Students also had that evening to finish up the missing assignment. If the student continued to not turn in the assignment, the teacher continued placing the student in a working lunch session until the assignment was completed and turned in. The participating teachers kept a log of the number of working lunch sessions served by each student as well as how many

missing assignments were still present at the end of the nine-week treatment phase. This data was also stored in the same Google Sheet so that it could easily be modified, organized, and shared between the teacher and the researcher. At the end of this nine-week period, students completed the posttest. The researcher also conducted post-interviews with the same interviewees. However, one of the students initially interviewed had moved to a different school during the time frame of the study and could therefore not be interviewed again to gain post-phase data.

Data Analysis

The research questions were used as a guide in order to determine the most appropriate ways of evaluating the data and drawing conclusions during the data analysis phase. Descriptive statistics were run using SPSS Statistics software for both the baseline and treatment data. Tables were created that included the means, standard deviation, as well as the information being broken down by gender.

In order to address the first research questions, a paired-sample *t*-test was run to determine if a significant increase in the mathematics assignment completion rate when a working lunch session instead of a zero in the grade book was used. Because the population of participants were the same in both phases of the study, this type of test was the most appropriate in order to compare the two different treatments, the zeros in the grade book verses the working lunch session. A .05 level of significance was used. An independent *t*-test for the second part of the first research question was run to determine if there was a significant change in the percentages of males and females on time assignment completion rate when a working lunch session was given for a missing assignment verses a zero in the gradebook. Finally, a Kruskal-Wallis test was run in order to analyze significant difference in academic achievement based on

the normalized gain scores from questions on the standardized assessment that were taught during the first research phase. An ANOVA was then run to analyze significant difference in academic achievement based on the normalized gain scores from questions on the standardized assessment that were taught during the second research phase. The Kruskal-Wallis and ANOVA were run to answer the second research question. All available results were used for the analyses; pairwise deletion was not used. Therefore, the sample sizes could vary from one research phase to the other.

Table 1 is included to show the research questions with their corresponding independent and dependent variables, instruments or measurements used for each key variable and their scales, as well as the measurement types and statistical analysis ran for each question.

Table 1

Research Questions, Type of Measurement for Variables, and Corresponding Statistical Analysis

Research Question	Key Variables	Instrument(s) or Measurement of the Key Variables and Scale	Measurement Type	Statistical Analysis
(1) Is there a significant increase in mathematics assignment completion rate when a working lunch session is given for missing assignments versus a zero in the grade book?	Independent variables: the intervention phases (phase 1 versus phase 2) Dependent variable: The percentage rate of students' on-time assignment completion	The percentage of on-time assignment turn-in rate during the first research phase (four-and-a-half weeks) and the percentage of on-time assignment turn-in rate during the second research phase (nine-weeks). The percentages can begin at zero percent and go up from there.	Ratio variable	Paired-sample <i>t</i> -test

(1.b.) Is there a significant difference between sexes for the change of mathematics assignment completion rate when a working lunch session is given for missing assignments versus a zero in the grade book?	Independent variables: the intervention phases (phase 1 versus phase 2), sexes Dependent variable: The change on the percentage rate of student's on-time assignment completion	The change from phase 1 to phase 2 on the percentage of on-time assignment turn-in rate during the first research phase (four-and-a-half weeks) the percentage of on-time assignment turn-in rate in the second research phase (nine-weeks). The percentages can begin at zero percent and go up from there. The nominal variable	Ratio and nominal variables	Independent sample <i>t</i> -test
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		scales are male and female.		
(2) Is there a significant increase in student academic achievement in mathematics when a working lunch session is given for missing assignments versus a zero in the gradebook?	Independent variables: Groups created based off missing assignments in each research phase	Students' scores on a summative pretest, mid-test, and post-test. Scores can range from a 0 to a 100.	Ratio variable	Kruskal-Wallis (first research phase) and ANOVA (second research phase)
	Dependent variable: normalized mean item gain scores from the first research phase and the second research phase			

CHAPTER FOUR: FINDINGS

Data Analysis

A quantitative study with segments of qualitative interviews was designed to evaluate the outcomes of using the common practice of assigning zeros in the grade book and whether a working lunch session with the opportunity to make up missing assignments is a more valid and effective strategy in increasing student academic achievement in mathematics and motivation to complete and turn in mathematics assignments on time. The assignment completion rates of seventh grade mathematics students in a Title I middle school in North Georgia were compared and analyzed as well as pretest, mid-test, and posttest data. The two research questions as mentioned in chapters one and three were analyzed, and the results of those analyses are discussed in this chapter.

Quantitative Findings

A paired-sample *t*-test was run for part A of the first research question that asked if there was a significant increase in mathematics assignment completion rate when a working lunch session was given for missing assignments versus a zero in the grade book. All parametric assumptions were met based on skewness being in the range of plus or minus two and kurtosis being in the range of plus or minus seven (West, S.G., Finch, J.F., & Curran, P. J., 1995).

Based on a sample of 68 students collected from seventh grade mathematics classrooms in a Title I middle school in North Georgia, the mean completion rate during the first research phase was 93.01 with a standard deviation of 10.40, and the mean completion rate during the second research phase was 93.66 with a standard deviation of 15.19. When comparing these two means in our sample, the paired-sample *t*-test was shown not statistically significant ($t = -.45$, $df = 67$, $p > .05$). Therefore, the null hypothesis that the assignment completion rate would be the same

was not rejected, as the sample mean of the first research phase completion rate was not statistically different from the second research phase completion rate.

The researcher further examined the data findings for the first research question that asked if there was a significant increase in mathematics assignment completion rate when a working lunch session was given for missing assignments versus a zero in the grade book. The researcher looked at the seventh grade students in the Title I middle school in North Georgia that had at least one zero in mathematics during the first research phase to determine if a significant difference was present for this sample of students during the second research phase. In this paired-sample t -test results, the mean completion rate during the first research phase was 80.83 with a standard deviation of 8.36, and the mean completion rate during the second research phase was 86.04 with a standard deviation of 22.28. When comparing these two means in our sample, the paired-sample t -test was shown not statistically significant ($t = -1.41$, $df = 22$, $p > .05$). However, the mean difference during the two research phases did show quite a bit of difference, and the p value was approaching significant difference. Table 2 displays the summary table for part A of the first research question.

Table 2

Summary Table of Paired-Samples t -Test Analysis (M and SD)

		Key Variable	Sample Size	First Phase	Second Phase	Test Results
RQ 1A	Whole Sample	Completion Rate	68	93.01 ($SD=10.40$)	93.66 ($SD=15.19$)	$t = -.45$ ($p > .05$)
RQ 1A	Students that had a zero in the first phase	Completion Rate	23	80.83 ($SD=8.36$)	86.04 ($SD=22.28$)	$t = -1.41$ ($p > .05$)

An independent *t*-test was run for part B of the first research question that asked if there was a significant difference between sexes for the change of mathematics assignment completion rate when a working lunch session was given for missing assignments versus a zero in the grade book. This type of analysis was acceptable to run because all parametric assumptions were met based on skewness being in the range of plus or minus two and kurtosis being in the range of plus or minus seven (West, Finch, & Curran, 1995). Based on a sample of 31 and 37 female students collected from seventh grade mathematics classrooms in a Title I middle school in North Georgia, the mean completion rate change for males was 1.19 with a standard deviation of 11.54, and the mean completion rate change for females was .19 with a standard deviation of 12.29. When comparing these two means in our sample, the independent *t*-test was shown not statistically significant ($t = .345, df = 66, p > .05$). Therefore, the null hypothesis that there would not be significant difference between sexes for the change of mathematics assignment completion rate when a working lunch session was given for missing assignments versus a zero in the grade book was not rejected.

Further analysis of part B of the first research question was conducted to examine whether a significant difference between sexes for the change of mathematics assignment completion rate when a working lunch session was given for missing assignments versus a zero in the grade book with male or female students that had at least one zero during the first research phase. In this independent *t*-test result, ten male and thirteen female students' data were analyzed. The mean completion rate change for males with at least one zero during the first research phase was 5.23 with a standard deviation of 16.33, and the mean completion rate for females with at least one zero during the first research phase was 5.20 with a standard deviation of 20.42. When comparing these two means in our sample, the independent *t*-test was shown not

statistically significant ($t = .004$, $df = 21$, $p > .05$). Table 3 displays a summary for part B of the first research question.

Table 3

Summary Table of Independent t-Test Analysis (M and SD)

Groups		Key Variable	Sample Size	Completion Rate Change	Test Results
RQ 1B	Male Only	Completion Rate	31	1.19 ($SD=11.54$)	$t=.345$ ($p>.05$)
	Female Only	Completion Rate	37	.19 ($SD=12.29$)	
RQ 1B	Male only for students that had a zero in the first phase	Completion Rate	10	5.23 ($SD=16.33$)	$t=.004$ ($p>.05$)
	Female only for students that had a zero in the first phase	Completion Rate	13	5.20 ($SD=20.42$)	

Students' academic achievement as measured by a summative pretest, mid-test, and posttest was collected from seventh grade mathematics classrooms that underwent two different research phases. During the first research phase, students were given a zero in the grade book without the opportunity to make up a missing assignment if an assignment was not turned in on time. In lieu of a zero in the grade book, students sat in a quiet working lunch session every day during the second research phase until the assignment was completed and turned in. The purpose of this first analysis was to look at academic achievement growth based on students normalized gain scores from content that was taught during the first research phase while factored by groups. The researcher factored the students by group so that she could analyze whether the working lunch session had a greater impact on a particular group of students. A more in-depth look such as this could display a greater impact that the working lunch session could have on certain groups of students and could therefore identify a particular group of students with the potential to

be further analyzed in future research. Group 1 ($n = 4$) represented students that went from no missing assignments in the first research phase to some missing assignments in the second phase. Group 2 ($n = 10$) were students that had some missing assignments in the first research phase but no missing assignments in the second phase. Group 3 ($n = 9$) had missing assignments in both research phases; therefore, they received at least one zero in the first phase and at least one working lunch session in the second research phase. Lastly, Group 4 ($n = 26$) represented students that turned in all assignments on time in both phases. The researcher analyzed the available results of the pretest, mid-test, and posttest, not pairwise deletion; therefore, the sample sizes may have been different from one assessment to another. Also for this analysis, the researcher was unable to locate the item by item results of 19 of the participants as she had saved the overall averages for all participating students. Therefore, this analysis looked at the normalized gain scores of 49 of the participants. The spreadsheet to determine normalized gain scores coded each test item response as follows: 3 for a correct answer, 2 for a partially correct answer, 1 for a wrong answer, and 0 for an un-attempted question. The normalized mean item gain scores also took in to account the time frame in which the standards that were being tested were taught. The content in the first 19 questions and question 21 of the assessment were covered during the first research phase. The normalized mean item gain score for the first research phase was .03 ($SD = .55$). All parametric assumptions were not met when running the descriptive statistics for the first research phase because the skewness did not fall in the range of plus or minus two, and kurtosis did not fall in the range of plus or minus seven (West, Finch, & Curran, 1995) Because of this, a Kruskal-Wallis test, a non-parametric test, was used to evaluate if a significant difference in academic achievement was present. The results revealed

that there was not a statistically significant difference in students' academic achievement ($p > .05$).

The next analysis looked at academic achievement growth based on students normalized gain scores from content that was taught during the second research phase. Again, the researcher analyzed the available results of the summative pretest, mid-test, and posttest, not pairwise deletion; therefore, the sample sizes may have been different from one assessment to another. Also for this analysis, the researcher was unable to locate the item by item results of 19 of the participants as she had saved the overall averages for all participating students. The same 49 participants as the Kruskal-Wallis test were examined in this analysis. The content from question 20 and the other 59 questions of the summative assessment were taught during the second research phase. The normalized mean item gain score for the second research phase was .24 ($SD = .20$). All parametric assumptions were met when running the descriptive statistics because the skewness fell in the range of plus or minus two, and kurtosis fell in the range of plus or minus seven (West, Finch, & Curran, 1995). Because of this, a one-way ANOVA was used to evaluate if a significant difference in academic achievement was present. The results revealed that there was not a statistically significant difference ($p > .05$). Table 4 displays the descriptive statistics for the two research phases not factored by groups along with their analysis significance value.

Table 4

Summary Table of Kruskal-Wallis and ANOVA Analyses (M and SD)

	Research Phase	Key Variable	Sample Size	Normalized Mean Item Gain Score Descriptives	Test Results
RQ 2	First Research Phase (Kruskal-Wallis)	Normalized Gain Score	49	.03 ($SD=.55$)	$p = .65 (p > .05)$
	Second Research Phase (ANOVA)	Normalized Gain Score	49	.24 ($SD=.20$)	$p = .70 (p > .05)$

Table 5 displays the descriptive statistics for the first research phase while factored by groups.

Table 5

Summary Table of Analysis by Groups for First Research Phase (M and SD)

	Research Phase	Key Variable	Sample Size	Normalized Mean Item Gain Score Descriptives	Median
RQ 2	Group 1	Normalized Gain Score	4	-.12 ($SD=.39$)	.02
	Group 2	Normalized Gain Score	10	.14 ($SD=.23$)	.12
	Group 3	Normalized Gain Score	9	.07 ($SD=.31$)	.07
	Group 4	Normalized Gain Score	26	.00 ($SD=.71$)	.11

Note. Group 1 represented students that went from no missing assignments in the first research phase to some missing assignments in the second phase. Group 2 were students that had some missing assignments in the first research phase but no missing assignments in the second phase. Group 3 had missing assignments in both research phases; therefore, they received at least one zero in the first phase and at least one working lunch session in the second research phase. Lastly, Group 4 represented students that turned in all assignments on time in both phases.

Table 6 displays the descriptive statistics for the second research phase while factored by groups.

Table 6

Summary Table of Analysis by Groups for Second Research Phase (M and SD)

Research Phase		Key Variable	Sample Size	Normalized Mean Item Gain Score Descriptives	Median
RQ 2	Group 1	Normalized Gain Score	4	.20 (<i>SD</i> =.21)	.15
	Group 2	Normalized Gain Score	10	.26 (<i>SD</i> =.16)	.25
	Group 3	Normalized Gain Score	9	.18 (<i>SD</i> =.25)	.10
	Group 4	Normalized Gain Score	26	.27 (<i>SD</i> =.20)	.26

Note. Group 1 represented students that went from no missing assignments in the first research phase to some missing assignments in the second phase. Group 2 were students that had some missing assignments in the first research phase but no missing assignments in the second phase. Group 3 had missing assignments in both research phases; therefore, they received at least one zero in the first phase and at least one working lunch session in the second research phase. Lastly, Group 4 represented students that turned in all assignments on time in both phases.

Qualitative Findings

The first qualitative research question asked how adolescents viewed a zero in the grade book without a makeup opportunity. In the pre-interviews, 50% of students stated that they viewed a zero as more of a punishment. However, in the post interview, 83% of the students in the interviews viewed a zero in the grade book without the opportunity to make up their work as a greater punishment than a working lunch session. The participants stated that they viewed a zero as a punishment for a variety of reasons but an ongoing theme was that it hurt their mathematics grades. One student stated they saw the zero as a punishment because, “You don’t

get to make up your work. So, if you don't finish it, it's a zero." Another student stated that a zero is more of a punishment because, "You would be failing, and you wouldn't have the opportunity to make it up." They also stated that a zero without the opportunity to make up a missing assignment is not beneficial to their learning because it does not give them the chance to practice their mathematics skills more; it just simply gives them a zero. Missing out on the opportunity to make up work did not provide the chance to redo the work which inevitably did not allow them to understand mathematics concepts better. One student even stated that getting a zero in the grade book was a punishment because it kept them from learning due to not having the opportunity to complete an assignment.

The second qualitative research question asked how adolescents viewed a working lunch with an opportunity to make up a missing assignment. In the pre-interview, 50% of the interviewees viewed a working lunch session with the opportunity to make up a missing assignment as more of a punishment than a zero without the opportunity to make up a missing assignment. These students stated that they saw a working lunch session as a greater punishment than a zero without the opportunity to make up the missing work because they are very social individuals and do not like to miss out on time to hang out and talk with their friends. One participant stated it like this: "I'm a social person, and I have a lot of friends. I don't like being taken away from the opportunity to get to talk to them." Another student stated that he viewed the working lunch session as, "Not a punishment," but an, "Opportunity for you to make up your grade." This student then went on to state that, "If it's kind of your choice to go do it, then it would not be a punishment, but if the teacher is in there forcing you to do it, then that's kind of more of a punishment." In the post-interviews, no students held to their statement that they saw a working lunch session as more of a punishment than a zero in the grade book. The majority of

students saw the working lunch session as a better option of the two choices because it gave students time to be in a quiet working environment, away from distractions, in a different setting than typical, and time to focus on their mathematics work. An interesting statement from one student went as follows: "Cause people sit around in class all day and don't do anything. But when you put them in a working lunch, away from their friends, away from this social life that they've worked 13 years to create, it angers people and when that happens they don't want to be in there anymore." This student viewed the working lunch session as a tool to help students complete their mathematics work in a different, quieter setting and that the absence of socializing with friends during that time would be a motivational tool to turn in assignments on time in the future so that time with friends is not missed. The students also saw the working lunch session as a benefit to their mathematics grades, something very important to most of the interviewed students. Students made comments such as, "You would actually have the chance to re-do it and learn more than what you did the first time," and, "When you have more time and different places and spots I guess to learn, it helps more than just sitting in the same spot and only having one chance to do it." Another student stated that the working lunch session could be helpful to their mathematics learning because, "You'll be able to understand the question more and like focus more because you won't be talking to people."

The third research question asked how adolescent students viewed punishments and negative reinforcers in helping motivate them to complete mathematics assignments on time. Through questioning, the researcher was able to determine that most students viewed the zero in the grade book as punishment and the working lunch session as negative reinforcement. This was based off the findings in the post-interview that 83% of the students in the interviews viewed a zero in the grade book without the opportunity to make up their work as a greater punishment

than a working lunch session. These participants then went on to state that they viewed a zero as a punishment because it hurt their mathematics grades. Once the researcher was able to identify what students' viewed as a punishment and a negative reinforcer, she then determined that most of the students viewed the negative reinforcement verses a punishment as a better choice for teachers to use in order to help students with their learning. They stated that the negative reinforcement would give them more opportunity to practice their mathematics skills which could possibly help them with their learning and understanding. They also viewed the punishment as greater motivation because they did not want their mathematics grade negatively impacted by not turning an assignment in on time.

The final qualitative research question sought to determine ways in which adolescent students' views of the zero in the grade book versus a working lunch session changed over time. In the pre-interviews, 50% of students stated that they viewed a zero without the opportunity to make up a missing assignment as more of a punishment than a working lunch session with the opportunity to make up a missing assignment. That percentage changed to 83% in the post-interviews. In the first interview one student stated that he saw the working lunch session as more of a punishment than the zero in the grade book because the teacher was forcing the student to have to sit in there to complete the work. However, in the post-interview his thoughts changed, and he saw the zero as more of a punishment. He stated that he saw it as more of a punishment, "Because you would be failing and you wouldn't have the opportunity to make it up." The other student that changed his opinion from the pre-interview to the post-interview also began the study feeling that a working lunch session was more of a punishment than the zero. He stated, "I feel like it depends on who it is. Like for me, I don't want a lunch detention so I'd personally like the zero. But if it were somebody else their response might be different." This

distinction about the individuality of all students is an interesting notion to keep in mind about the importance of flexibility and differentiated techniques and practices to use with adolescent learners. He stated that he saw the working lunch session as more of a punishment, "Cause I'm a social person, and I have a lot of friends. I don't like being taken away from the opportunity to get to talk to them." However, in the post-interview, the student saw the zero as more of punishment because, "It decreases your grade. Therefore, you could fail." Students' reasoning on why the zero in the grade book is more of a punishment stayed pretty consistent throughout the study in that it did not allow students time to have more practice on their mathematics skills which affected their grades and learning in mathematics.

CHAPTER FIVE: DISCUSSION

The purpose of this chapter is to summarize the results of this study and to discuss future research and practical implications for its findings. The chapter is broken in to sections that include an overview of the study, a review of the methodology, and a summary of the results. It also includes a discussion of the findings as well as limitations and applications of the study. In addition, the researcher provides recommendations for future research related to the study.

Overview

Teachers of adolescent students are constantly looking for ways of enhancing students' motivation and self-regulation to turn in assignments on time. However, with a decline in academic motivation, organizational skills, and the desire to learn in adolescent students, it can be quite difficult for middle grade teachers to find best practices that actually work in the classroom (Gurland & Glowacky, 2011; Scales, 1996; Van der Werf, Opdenakker, & Kuyper, 2008; Wigfield, Eccles, & Rodriguez, 2006).

Grades continue to play a very important role in the American educational system (Hirschenbaum, Simon, & Napier, 1971). Therefore, teachers will often include zeros in the grade book for missing assignments, a hodgepodge grading practice (Grimes, 2010), with the assumption that it will help increase student motivation and self-regulation habits of turning in assignments on time. Even though research has shown that grading practices can encourage or stifle a student's desire to learn, especially in occurrences where students have previously failed, (Buffum, Mattos, & Weber, 2009) and that the use of zeros is an inaccurate reflection of students' abilities (Raebeck, 1993), many teachers refer back to the use of zeros for not turning in assignments with some even seeing zeros as "their ultimate grading weapon" (Guskey, 2004, p. 50). Furthermore, it is essential for teachers of adolescent students to find practices that

support students' motivation and self-regulation to turn in assignments on time while also benefiting academic growth.

Purpose

The purpose of this study was to evaluate whether the use of a working lunch session when students did not turn in assignments on time in lieu of a zero in the grade book, a very common practice in education, could have a significant increase in adolescent students' assignment completion rate as well as their academic achievement in mathematics. All seventh grade mathematics students in the two participating teachers' classrooms underwent the two research phases. During the first research phase, students were given a zero in the grade book without the opportunity to make up an assignment if the student did not turn in the assignment on time. In the second research phase, students that did not turn in an assignment on time sat in a working lunch session for as many days as necessary until the assignment was completed. The assignments were a combination of in-class assignments as well as some weekly homework assignments. In the participating classrooms, in-class assignments that were not completed during class time became homework and were expected to be turned in at the beginning of class the following day.

Research Questions

Research Question 1A: Is there a significant increase in the mathematics assignment completion rate when a working lunch session is given for missing assignments verses a zero in the grade book?

H1A₀: A statistically significant increase is not present in the mathematics assignment completion rate when a working lunch session is given for missing assignments verses a zero in the grade book.

Research Question 1B: Is there a significant increase in the mathematics assignment completion rate between sexes when a working lunch session is given for missing assignments verses a zero in the grade book?

H1B₀: A statistically significant increase is not present in the mathematics assignment completion rate between sexes when a working lunch session is given for missing assignments verses a zero in the grade book.

Research Question 2: Is there a significant increase in student academic achievement in mathematics when students are given a working lunch session for missing assignments verses a zero in the grade book?

H2₀: A statistically significant increase will not be present in students' performance on a mathematics summative assessment after students are given a working lunch session for missing assignments verses a zero in the grade book.

Along with the quantitative data, qualitative student pre-interviews and post-interviews were administered to address the following questions:

Research Question 1: How do adolescents view a zero in the grade book without a make up opportunity?

Research Question 2: How do adolescents view a working lunch with an opportunity to make up a missing assignment?

Research Question 3: How do adolescent students view punishments and negative reinforcers in helping motivate them to complete mathematics assignments on time?

Research Question 4: In what ways did adolescent students' views of the zero in the grade book versus a working lunch session change over time?

Participants

The 68 participating seventh grade mathematics students were from a Title I middle school in North Georgia. There were approximately 750 students in the school with a little over 75% of students in the building receiving free or reduced lunch. The demographics of the student population were approximately as follows: 84% Caucasian, 6% African American, 7% Hispanic, 2% Asian, and less than 1% Native Hawaiian or Pacific Islander. Mathematics has not been a strong suit for this school. In 2016, 73% of 6th graders, 59% of 7th graders, and 63% of eighth graders scored a 1, beginning learner, or a 2, developing learning, on the Georgia Milestones End of Grade assessment. In 2017 those scores slightly improved in some grade levels to 71% of 6th graders, 62% of seventh graders, and 54% of eighth graders scoring a 1 or 2 on the Georgia Milestones End of Grade Assessment. Teachers in the participating school also reported that assignment completion was a significant problem for a majority of students. Half of the teachers in the building stated that 60 to 90 percent of their students typically had at least one incomplete assignment or an assignment not turned in on time during a nine-week period.

Summary of Results

Statistical testing was completed for the assignment completion rate as well as the summative pretest, mid-test, and posttest data gathered during the study. Descriptive statistics were run for the assignment completion rate data of all students and then filtered by sex. A paired-samples *t*-test was run using SPSS software to determine if a significant increase in the mathematics assignment completion rate when a working lunch session was given for missing assignments verses a zero in the grade book was present. Results showed that there was not a significant difference in the assignment completion rate when a working lunch session verses a zero in the grade book was used for missing assignments. Further analysis of this data was then broken down by looking at students that had at least one zero during the first research phase to

determine if a significant difference was present for this sample of students during the second research phase. This paired-samples *t*-test also showed that there was no statistically significant difference. However, the mean difference during the two research phases did show quite a bit of difference, and the *p* value in the second paired-samples *t*-test was approaching significant difference. If the sampling of students underwent these changes for a longer period of time or if the sample of students was larger, a significant difference in the two research phases could be present.

After filtering the data by sexes, an independent *t*-test was run for part B of the first research question that asked if there was a significant difference between sexes for the change of mathematics assignment completion rate when a working lunch session was given for missing assignments versus a zero in the grade book. Results of this test showed no statistically significant difference. Further analysis of part B of the first research question was performed to see whether a significant difference between sexes for the change of mathematics assignment completion rate when a working lunch session was given for missing assignments versus a zero in the grade book with male or female students that had at least one zero during the first research phase. In this independent *t*-test, the results also showed no statistically significant difference.

A Kruskal-Wallis test and a one-way ANOVA was conducted using SPSS software to test the differences between the normalized gain scores found from the summative pretest, mid-test, and posttest by each research phase, and the results revealed that the working lunch session in lieu of the zero in the grade book did not have a significant effect on students' academic achievement.

Results from the first qualitative research question found a change in students' views of whether they saw a zero or a working lunch session as more of a punishment. In the pre-

interviews, 50% of students stated that they viewed a zero as more of a punishment. However, in the post-interview, 83% of the students stated that they viewed a zero as more of a punishment. An ongoing theme from students' responses was that they saw a zero as more of a punishment because it hurt their mathematics grades. Also, several of the students stated that a zero without the opportunity to make up a missing assignment was not beneficial to their learning because it did not give them the chance to practice their mathematics skills more; it just simply gave them a zero. Missing out on the opportunity to make up work did not provide the chance to re-do the work which inevitably did not allow them to understand mathematic concepts better.

The second qualitative research question asked how adolescents viewed a working lunch session with an opportunity to make up a missing assignment. In the pre-interview, 50% of the interviewees viewed a working lunch session with the opportunity to make up a missing assignment as more of a punishment than a zero without the opportunity to make up a missing assignment. However in the post-interviews, no students held to their statement that they saw a working lunch session as more of a punishment than a zero in the grade book. The majority of students saw the working lunch session as a better option than the zero in the grade book because it gave students time to be in a quiet working environment, away from distractions, in a different setting than typical, and time to focus on their mathematics work. The students also saw the working lunch session as a benefit to their mathematics grades, something very important to most of the interviewed students.

The third research question asked how adolescent students viewed punishments and negative reinforcers in helping motivate them to complete mathematics assignments on time. Through students' qualitative responses, the researcher was able to determine that most students viewed the zero in the grade book as punishment and the working lunch session as negative

reinforcement. Many of the participants went on to state that they viewed a zero as a punishment because it hurt their mathematics grades. Once the researcher was able to identify what students' viewed as a punishment and a negative reinforcer, she then determined that most of the students viewed the negative reinforcement versus a punishment as a better choice for teachers to use in order to help students with their learning. They stated that the negative reinforcement would give them more opportunity to practice their mathematics skills which could possibly help them with their learning and understanding. They also viewed the punishment as greater motivation because they did not want their mathematics grade negatively impacted by not turning an assignment in on time.

The final qualitative research question sought to determine ways in which adolescent students' views of the zero in the grade book versus a working lunch session changed over time. Half of the students in the pre-interview stated that they viewed a zero without the opportunity to make up a missing assignment as more of a punishment than a working lunch session with the opportunity to make up a missing assignment. However, that percentage changed to 83% in the post-interviews. Students' reasoning on why the zero in the grade book was more of a punishment stayed pretty consistent throughout the study in that it did not allow students time to have more practice on their mathematics skills which affected their grades and learning in mathematics.

Discussion

As noted in chapters one and two, prior research has found that grading practices can encourage or diminish a student's desire to learn (Buffum, Mattos, and Weber, 2009). However, teachers continue to use hodgepodge grading criteria such as the use of zeros even though it is an inaccurate reflection of students' abilities (Raebeck, 1993). A lack of academic interest in

adolescent students (Elam, 1989), a decline in student motivation (Van der Werf, Opdenakker, & Kuyper, 2008; Wigfield, Eccles, & Rodriguez, 2006), and biological, cognitive, self-concept and identity changes in early adolescents (Wigfield et al., 2006) are all factors relating to assignment completion and academic progress in middle grades education. Research suggests that the use of zeros is an ineffective practice to use in the classroom as it is seen as a punishment and often does not provide students with the extra time and opportunity to learn. Guskey (2007) writes that after students are unsuccessful, they should be given a second chance to show competence and understanding.

The results of this study revealed that a working lunch session, with the opportunity to make up a missing assignment, had no significant difference in students' assignment completion rates versus when students were given a zero in the grade book without the chance to make up the missing work. However, it cannot be said that the working lunch session had no impact on some students. The study did show that students that had a zero in the first research phase were showing some improvement in assignment completion when a working lunch session was offered. While these results were still not significantly different, the average completion rates were higher and if studied over a longer period of time with a larger sampling of students could have shown a statistically significant impact on students' assignment completion. Therefore, it could be a useful tool for teachers of adolescents to implement a working lunch session for students that had a prior history of not turning in assignments.

In regards to academic achievement in mathematics, the study did not find a significant difference between groups in scores on summative pretests, mid-tests, and posttests covering seventh grade mathematics standards when a working lunch session was used for students to complete missing assignments instead of students receiving a zero in the grade book without the

opportunity to turn in the missing assignment. While time was a factor to consider in students' academic growth, the study revealed that providing students with a second chance to master skills, instead of giving a zero and moving on after an assignment had not been turned in, did not necessarily have a significant impact on their learning in mathematics. However, seventh grade students expressed this personal views during qualitative interviews. An ongoing theme in students' responses showed that students felt that a zero without the opportunity to make up missing work hurt their grade as well as their learning because it inhibited them from being able to practice those skills through the assignment at a later time.

While the results from the study do not offer a guaranteed best practice to use as an intervention in lieu of a zero in the grade book, the study does show that a working lunch session can be a better choice than a zero in the grade book when considering student input. Student responses reported that a working lunch session was a better alternative in comparison to the use of a zero in the grade book without the opportunity to make up the assignment. Students view a zero as a punishment and feel that it inhibits their learning. Based on student responses such as this, teachers should reconsider the use of zeros in the grade book without the opportunity to make up the grade.

As mentioned earlier in the theoretical framework, behaviorists state that "Because reinforcers are defined by their effects, they cannot be determined in advance" (Schunk, 2016, p. 90). Schunk (2016) wrote, "One can never know for certain whether a consequence is reinforcing until it is presented after a response and we see whether behavior changes" (p. 90). Since the only way to determine if something is a reinforcer is by testing it to see if it produces any effects, it was interesting to see the results of the zero in the grade book verses the working lunch session and whether either one actually had an impact on students' learning. Because of

the insignificant findings from the quantitative data on the impact of a working lunch session verses a zero in the grade book on adolescents assignment completion rate, it could be said that a working lunch session in lieu of a zero in the grade book did not work as either negative reinforcement or punishment. However, there were twelve students that went from missing an assignment in the first research phase, when the zero was given, to turning in all assignments on time in the second research phase, when students had to sit in a working lunch session. For these students, it could be said that the working lunch session did work as a punishment in increasing their assignment completion rate. In the first qualitative interviews, students discussed that they viewed a working lunch session as more of a punishment than a zero in the grade book. However, those views changed in the post-interviews as 100% of the interviewed students stated that they later saw a zero in the grade book as more of a punishment because it impacted their grade. So, quantitative data displayed that a working lunch session could work as a punishment for a select group of students, and qualitative data from the six interviewed students showed that a zero in the grade book was seen as a punishment as it impacted a students' behavior to turn in an assignment on time.

In contrast to the behaviorist's view, social cognitivists believe that students can learn vicariously. Vicarious learning is when a person learns by viewing another person (Schunk, 2016). Thirty-six students did not have missing assignments in either research phase. These students did not have to learn the importance of turning in assignments on time through what behaviorists would say is an integral part of learning, reinforcement or punishment. These students are examples of how learning can happen through cognition simply by observing others. As they observed other students receiving zeros in the grade book and having low mathematics class averages as well as observing students having to sit in working lunch sessions, the students

were able to learn the value of turning in an assignment on time; therefore, they turned in all of their assignments on time in both research phases. Therefore, it could be said that the majority of students in this study learned based on the theories set forth by social cognitivists.

Limitations

While this study looked at the impact that a working lunch session with the opportunity to make up a missing assignment verses a zero in the grade book without the opportunity to make up a missing assignment could have on student motivation to complete assignments on time and academic achievement in adolescent learners, the study only included seventh grade participants from a Title I middle school in North Georgia. While the sampling in the study produced a representative sample sufficient for data analysis, generalizations might not be able to be made about other adolescent grade levels. Further study with sixth and eighth grade students would need to be performed in order to make those generalizations. Also, this age range is in no way reflective of all students. Therefore, it is uncertain if the findings could be translated to elementary, high school, and post-secondary learners. Being that this study was performed in a Title I school in a North Georgia school district, students from other parts of the United States would need to be studied to make generalizations. Also, a larger percentage of students with greater diversification in terms of race and socio-economic status would need to be studied to make greater generalizations.

In addition to only looking at seventh grade participants, this study did not take in to account the impact of a working lunch session verses a zero in the grade book on special education students. All of the participating students were in a non-inclusion classroom and did not receive services from an Individualized Education Plan, IEP. Therefore, the study is limited

to only regular education students, and the findings may not be generalizable to special education students.

While all 125 students in the six participating classrooms participated in the study changes, only 68 of those students actually turned in signed permission forms from their parent or guardian in order for their data to be used in the data set. It could be that the students that did not turn in the consent forms are also the students that often do not turn in assignments on time. Therefore, the consent procedure could have had an unintended selection bias.

As stated in the procedures section of this chapter, many of the students in this Title I middle school were below proficiency on the Georgia Milestones End of Grade Assessment in the area of mathematics. With mathematics being an area of concern for this school, it could place a limitation on the generalizability of the data with students in schools that are proficient or greater in mathematics.

It is important to keep in mind the individuality, differences, and similarities in teaching strategies and practices. While the study's test procedures and summative assessments were the same, teachers and their classroom environment, culture, and teaching practices can vary greatly. Therefore, these types of differences could have been a factor in the study results.

Applications

Teachers across the United States continue to use a hodgepodge of grading criteria in their grading practices including the use of zeros for missing assignments. Teachers of adolescent students are constantly looking for ways to better motivate students and help in the self-regulation practices of getting students to complete and turn in assignments on time due to a decline in the motivation to learn, organizational skills, and desire to learn during the adolescent years. Often times, adolescent teachers turn to the use of zeros for missing assignments with the

assumption that it will help encourage and better motivate students to turn in their assignments on time in the future. For teachers that do have the desire to use a practice in lieu of a zero in the grade book, it is essential that they use research-backed strategies that actually work. In addition to helping students turn in assignments on time, teachers have the task of finding the best research-based strategies and classroom practices that best help students' academic growth and success.

Teachers can see from this study that a working lunch session is not necessarily the perfect answer in helping students to turn in assignments on time. However, for students with a history of not turning assignments in on time, it could be a better choice of strategies to use to help encourage assignment completion in the future. Qualitative findings from this study do support a working lunch session where students have the opportunity to complete a missing assignment as a better choice instead of a zero in the grade book without the opportunity to make it up missing or late work in terms of academic progress. With the desire for all students to succeed and grow in their academic skills, teachers should stray from the use of zeros without the opportunity to make up missing work and instead provide students with the time, quiet environment, and second chance to work on their missing assignment during a working lunch session.

Recommendations for Future Research

There are a few recommendations for future research on the use of a working lunch session versus a zero in the grade book on mathematics assignment completion rate and academic achievement in adolescent students. First, this study only looked at seventh grade participants over a 13-week period. Because this data is not generalizable, a larger sample

population as well as a longer study period could help generalize the findings and possibly find statistically significant data in regards to assignment completion rates.

Upon further analysis of the first research question, when looking at students that had at least one zero during the first research phase, the mean difference during the two research phases showed quite a bit of difference, and the p value was approaching significant difference. Therefore, further research on a sampling of students like this should be done for a longer period of time and with a larger sampling of students to determine if the use of a working lunch session versus a zero in the grade book can have an effect on the assignment completion rate of students that tend to not turn in assignments on time when given a zero in the grade book.

The working lunch session in this study consisted of very few guidelines. Students sat in a quiet room where they could eat their lunch and have a distraction-free zone to finish up on their missing assignment. A teacher sat in the working lunch session and was able to provide assistance if needed by the student. It could be that a more structured working lunch session should be further researched to determine if it could have a greater impact on assignment completion rate and academic achievement in mathematics. One idea for further research would be to structure the working lunch session in a way where students worked on an online learning tool such as Ascend Math so that they could listen to a mini-lesson covering the content included on the missing assignment and then complete the missing work. The re-teaching component could be an interesting variable to look at especially in terms of its impact on academic achievement.

Previous studies completed by Hinton and Kern (1999) and Clarke et al. (1995) mentioned in chapter two discussed the positive impacts that the integration of high interest topics in to students' assignments can have on assignment completion, eagerness to complete

homework assignments, and class participation. The integration of both a working lunch session as well as assignments containing topics of high student interest could be examined in further research to determine if the combination of these two interventions could have a positive impact on adolescents' assignment completion rates and academic achievement growth.

Conclusion

Numerous studies have been carried out looking at adolescent students and what makes these learners so unique from the rest. Research has shown an overwhelming trend of a decline in academic motivation, organizational skills, and the desire to learn in adolescent learners (Gurland & Glowacky, 2011; Scales, 1996; Van der Werf, Opdenakker, & Kuyper, 2008; Wigfield, Eccles, & Rodriguez, 2006). All of these traits can often lead to adolescents lacking in the self-regulation and motivational practices necessary in consistently turning in all classroom assignments on time. In addition, these traits can have a negative impact on student learning and academic progress. Therefore, it is essential that teachers of adolescents find research-based strategies and techniques to practically use in the classroom to promote assignment completion and academic achievement. The use of zeros in the grade book for missing assignments, a hodgepodge grading practice, continues to be used even though a plethora of research exists to invalidate the impact of this practice. With all of that being said, a continuation in this type of research should persist in order to add to the body of research for techniques that can be used in middle grades classrooms. The results of this study discredit the use of a working lunch session verses a zero in the grade book for missing assignments as a tool to encourage greater assignment completion rates. It also adds a qualitative finding that adolescent students view zeros as a greater punishment than a working lunch session and that zeros for missing assignments do not help in their learning of mathematics. However, this study does suggest that

the use of a working lunch session, in lieu of a zero in the grade book for missing assignments, could be a practical tool for teachers of adolescents to use to support greater academic achievement in mathematics.

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Appendices

Appendix A

Interview Protocol

Interview # _____

Date _____/_____/_____

Script

Thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes.

At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. Do you have any questions or concerns before we begin? With your permission, we will begin our interview.

1. Would you consider a working lunch detention, with the opportunity to make up a missing assignment or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment?
2. Why would you consider the _____ more of a punishment than _____?
3. Would you be more motivated to turn in a mathematics assignment on time if you knew that you would have to miss out on socializing with your friends during lunch or if you were to get a zero in the grade book and why?
4. In what ways could having the opportunity to make up any missing assignments help you with your mathematics learning experience?
5. Before we conclude our interview, is there anything else that you would like to add to our conversation about the use of punishment verses negative reinforcement in your learning experience?

Script

Thank you so much for your participation in this study and today's interview.

Appendix B

Qualitative Pre-Interview with Participant 001

Researcher: Thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. Do you have any questions or concerns before we begin? Can you say it out loud?

Participant: No

Researcher: With your permission, we will begin our interview. Alright so first question: Would you consider a working lunch detention, with the opportunity to make up a missing assignment or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment?

Participant: Not having to go sit in a lunch session

Researcher: Not having to go and sit in a lunch session...ok you think that's more of a punishment than getting a zero in the grade book?

Participant: Yeah

Researcher: Ok, alright, why would you consider having to do the working lunch session why would you consider that more of a punishment than the zero?

Participant: because...that's a good question

Researcher: What do you think?

Participant: It's not really more of a punishment as it is an opportunity for you to make up your grade

Researcher: Ok so do you think that it's to not have the opportunity to make up your grade is a punishment or do you think um having the opportunity to make it up is a punishment?

Participant: Not really cause if they don't really give you the opportunity to make it up so if...

Researcher: Ok so just to just to just to make sure that I understand...so you definitely think um having to go and sit in a working lunch session that's more of a punishment then just getting a zero and being done with it

Participant: If it's kind of your choice to go do it then it would not be a punishment but if the teacher is in there forcing you to do it then that's kind of more of a punishment

Researcher: Alright... that seems more of a punishment? ok.. alrighty...

Participant: Yeah

Researcher: And so I guess um you consider it more of a punishment because the teacher is the one making you make it up

Participant: Yeah

Researcher: Ok..alright.. I get what you're saying now. Alright next question... Would you be more motivated to turn in a math assignment on time if you knew that you would have to miss out on socializing with your friends during lunch or if you were to get a zero in the grade book? So, would you be more motivated... like, I am more tempted to turn this in on time so that I can

sit in lunch with my friends or am I more motivated because oop I'm going to get a zero in the gradebook?

Participant: Probably I'm going to get a zero

Researcher: Ok alright so the zero is more motivation for you?

Participant: Yeah

Researcher: Ok why do you think that is?

Participant: Because it's a part of your grade and I'd rather make it up than to go sit with my friends

Researcher: Ok so you would rather have a better grade than you would socializing with your friends for a little while?

Participant: Yeah

Researcher: Ok alright, alright, in what ways could having the opportunity to make up any missing assignments help you with your math learning experience? So, having the opportunity to get to go and sit in a working lunch session um do you think that there would be ways that it could help you in your learning?

Participant: Yeah because you would actually have the chance to redo it and learn more than what you did the first time.

Researcher: Ok alright good...good stuff. Alright and then the last question... Um before we conclude our interview, is there anything else that you would like to add to our conversation about the use of a zero in the grade book versus the working lunch session in your learning experience?

Participant: Nope

Researcher: Ok alright well thank you so much for your participation in this study and today's interview.

Appendix C

Qualitative Pre-Interview with Participant 002

Researcher: Thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. Do you have any questions or concerns before we begin? Can you say it out loud?

Participant: No

Researcher: Alright so with your permission, we will begin our interview. Alright so first question: Would you consider a working lunch detention, with the opportunity to make up a missing assignment or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment?

Participant: The lunch detention so you can actually finish the work and get a grade on it

Researcher: Ok so you think that is more of a punishment than just getting a zero in the gradebook. Ok. Why would you consider having to do the working lunch session more of a punishment than the zero?

Participant: Um because lunch detention means you don't in lunch detention you get to hang out with your friends and stuff and so that takes away that time so that you can actually finish your work.

Researcher: Ok alright so you're saying that it's more of a punishment if I'm not hanging out with my friends than it is... you would rather get the zero in the gradebook and get to hang out with your friends.

Participant: Yeah

Researcher: Ok, alright... alright, would you be more motivated to turn in a math assignment on time if you knew that you would have to miss out on socializing with your friends during lunch or if you were to get a zero in the grade book and why?

Participant: If like if I didn't get to socialize with my friends since like some of my friends I don't have classes with so I get to socialize with them in lunch.

Researcher: Ok alright alright...in what ways could having the opportunity to make up any missing assignments help you with your math learning experience?

Participant: Um...

Researcher: So, having the opportunity to make up your missing assignments, how do you think that could help you?

Participant: Um it could like cause if you just get a zero it's just going to bring your grade down but if you like finish your work during lunch detention it'll help you get your grade and it will like not get you a zero.

Researcher: So with that in mind, with that with what you said, so do you still think even though it could help you learn better, you still think that it's more of a punishment to not be able to socialize than um than being able to or it's more important to be able to socialize than it is...

(student interrupts interview) hey Bentley, could you thanks (student walks out)...would you say that it still for you more beneficial or you would rather be able to sit and socialize with your friends than you would to be able to actually make up your grade and do better in math?

Participant: I would rather make up my grade and do better in math than to socialize with people.

Researcher: Ok...alright. Before we conclude our interview, is there anything else that you would like to add to our conversation about the use of punishment versus the working lunch session in your learning experience?

Participant: No

Researcher: Ok alright thank you so much for your participation in this study and today's interview.

Appendix D

Qualitative Pre-Interview with Participant 003

Researcher: Alright thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. You good? (student shakes head yes) ok can you say yes so that way

Participant: Yes

Researcher: Ok perfect and do you have any questions or concerns before we begin?

Participant: No

Researcher: No? Ok. With your permission, we will begin our interview. Would you consider a working lunch session, where you have the opportunity to make up a missing assignment, or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment? Which one would you see more as a punishment? So going and sitting in a working lunch session and having to do that and make it up or getting a zero and not having the opportunity to make it up.

Participant: Like would you only get 75 percent of your grade or...?

Researcher: You wouldn't... So, if you did the working lunch session?

Participant: Uh huh

Researcher: You wouldn't get any points taken off. You would just have the opportunity to keep working on it. Um, but you would have to keep sitting in the working lunch session until you got it finished.

Participant: So...which punishment would be better?

Researcher: Which one do you see as a punishment?

Participant: The zero in the grade book

Researcher: The zero in the grade book. Ok, alright. Why would you consider the zero in the grade book more of a punishment versus the working lunch session?

Participant: Cause uh let's say you have to make up a math math uh sheet that you didn't do and you go to your lunch session and you do it and you get that full credit but when you get a zero in the grade book in the grade book that could probably teach the student not to finish their work and uh to get a better grade.

Researcher: Ok so you think because it's affecting your grade, you see that as a punishment? Is that right?

Participant: Uh huh

Researcher: Ok alright next question. Would you be more motivated to turn in a math assignment on time if you knew that you would have to miss out on socializing with your friends during lunch or if you were to get a zero in the grade book and why? So which one would motivate you better? Having the knowing that you are going to miss out on socializing with your friends at lunch or getting a zero in the grade book?

Participant: I would rather uh not socialize with my friends because uh you can socialize with them when you're outside, waiting for the buses, or between lockers, or at connections...

Researcher: Uh huh

Participant: or like when you have like a tech break

Technical issue with recorder during the 3rd interview. New audio picks up where the interview left off.

Researcher: Alright keep going sorry

Participant: Oh that's all

Researcher: Ok alright um so definitely so you're saying I just want to make so you're saying that getting that zero in the grade book that's more motivation to you. Like..I gotta get this stuff turned in cause if I don't that's not going to be good to get a zero. Is that right?

Participant: Yes

Researcher: Ok alright. Another question... in what ways could having the opportunity to make up a missing assignment help you with your math learning experience? In what ways could having the opportunity to make up any of your missing math work help you with your math learning experience?

Participant: It could uh...well I don't really see a way it would help you cause you're just uh doing the other things you've already learned in class so you're not really learning anything else.

Researcher: Ok alright do you think that maybe um just having the more time to practice do you think that that could help?

Participant: Yeah

Researcher: Ok cause really if you're doing cause if you get the zero and you don't get the opportunity to make it up then you're kind of missing an opportunity to practice. Um but if you

have the opportunity to make it up so you think that that could kind of help a little bit maybe with your learning? Just to kind of have some more practice?

Participant: Yes

Researcher: Ok. Before we conclude our interview, is there anything else that you would like to add to our conversation about the use of punishment like a zero in the grade book versus the working lunch session in your learning experience?

Participant: Well it doesn't really involve me but I don't really find this experiment like I don't really like it that much

Researcher: Uh huh

Participant: But I think that I'm doing good right now. Cause uh used to I used to make bad grades

Researcher: Oh yeah?

Participant: Cause I didn't have the opportunity to make it well I had the opportunity to make it up but I just never made it up cause I had other things that I wanted to do instead of that.

Researcher: So now that this study has started have you done better about getting all of your assignments turned in?

Participant: Yes

Researcher: That's good. Why is that?

Participant: Well cause it's just been that my mom wants me to be getting a good grade and she's been, well, she's been taking up my tablet away from me until I finish my homework so yeah...

Researcher: So knowing now that you don't if you don't turn it in knowing that if you don't get it turned in and that it's going to affect your grade then that's kind of been more motivating to you to get it turned in?

Participant: Uh huh

Researcher: Ok well that's good to know. That is really good to know. Well I'm glad you're doing better. Well thank you so much for interviewing.

Appendix E

Qualitative Pre-Interview with Participant 004

Researcher: Thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent.

Participant: Yes

Researcher: Ok, do you have any questions or concerns before we begin?

Participant: No

Researcher: Ok with your permission, we will begin our interview. Alright: Would you consider a working lunch detention, with the opportunity to make up a missing assignment or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment? Which one would you see as more of a punishment? Getting a zero and not being able to turn it in late, or you don't turn something in you have to sit in a working lunch session until you get it turned in.

Participant: I feel like it depends on who it is. Like for me, I don't want a lunch detention so I'd personally like the zero. But if it were somebody else their response might be different.

Researcher: Ok so for you, why do you see why would you consider the working lunch session as more of a punishment than the zero?

Participant: Cause I'm a social person and I have a lot of friends and I don't like being taken away from the opportunity to get to talk to them.

Researcher: Uh huh

Participant: So I don't like not talking to people when I have the opportunity.

Researcher: Sure, so that would uh for you, since you're a social butterfly, uh for you it's more important for you to hang out with your friends and get to talk to them than it is for your great to be affected.

Participant: Perhaps, yeah

Researcher: Ok alright. Alright next question. Would you be more motivated to turn in a math assignment on time if you knew that you would have to miss out on socializing with your friends during lunch or if you were to get a zero in the grade book and why? So which one would motivate you better to turn in your assignment? If you knew that you were going to get the zero or if you knew that you were going to have to sit in the working lunch session.

Participant: The working lunch session

Researcher: Ok and why is that? Why would that motivate you better?

Participant: Cause I like talking to my friends

Researcher: Ok um in what ways could having the opportunity to make up a missing assignment help you with your math learning experience? In what ways could having the opportunity to make up your missing assignment how could that help you with your math learning experience?

Participant: When you have more time and different places and spots I guess to learn it helps more than just sitting in the same spot and only having one chance to do it.

Researcher: Ok...alright. Before we conclude our interview, is there anything else that you would like to add to our conversation about the use of punishment versus negative in your learning experience?

Participant: No

Researcher: Ok alright thank you so much for your participation in today's interview.

Appendix F

Qualitative Pre-Interview with Participant 005

Researcher: Thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. Do you have any questions or concerns before we begin?

Participant: No

Researcher: Ok so with your permission, we will begin our interview. Alright first question: Would you consider a working lunch session, with the opportunity to make up a missing assignment or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment? Which one would you see as more of a punishment? The zero, not being able to turn in something, or sitting in a working lunch session but you are able to make it up.

Participant: The zero

Researcher: The zero. Ok. Why would you consider the zero more of a punishment than sitting and doing the working lunch session?

Participant: Because you don't get to make up your work so if you don't finish it it's a zero.

Researcher: It's a zero. So you think for you you feel like because it would impact your grade that's more of a punishment than missing social time with your friends?

Participant: Yes.

Researcher: Ok. Alrighty. Alright. Would you be more motivated to turn in a math assignment on time if you knew that you would have to miss out on socializing with your friends during lunch or if you were to get a zero in the grade book and why? So which one would be more motivating to you?

Participant: The zero

Researcher: Ok and why is that?

Participant: Because it encourages me to get my work done so that I wouldn't get a zero.

Researcher: Ok alright in what ways could having the opportunity to make up a missing assignment help you with your math learning experience? So having the opportunity to make up a missing assignment how do you think that could help you with your learning?

Participant: You'll be able to understand the question more and like focus more. Because you won't be talking to people.

Researcher: Ok ok alright. Anything else? Any other ways that you think that having more opportunity to finish up that it could be helpful?

Participant: No

Researcher: Alright, before we conclude our interview, is there anything else that you would like to add to our conversation about the use of punishment versus negative reinforcement in your learning experience?

Participant: No

Researcher: Ok thank you so much for your participation in this study and today's interview.

Appendix G

Qualitative Pre-Interview with Participant 006

Researcher: Thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. You good?

Participant: Yes

Researcher: Ok perfect and just make sure to speak up so that I can hear you on here. Do you have any questions or concerns before we begin?

Participant: No

Researcher: Nope ok with your permission, we will begin our interview. Alright first question: Would you consider a working lunch session, where you don't have the opportunity, or excuse me where you do have the opportunity to make up a missing assignment or a zero in the grade book, without the opportunity to make up a missing assignment, um more of a punishment?

Participant: The working lunch

Researcher: The working lunch session

Participant: Yeah

Researcher: Ok and why would you consider the working lunch more of a punishment than the zero?

Participant: Because you didn't do your work so....yea...

Researcher: So like, like, is it more so that you are losing time losing social time or is it more of a punishment because you have to keep working at it until it is finished? Like what part of it actually makes it more of a punishment?

Participant: Oh wait more of a punishment?

Researcher: Yes, which one do you see as more of a punishment? The zero without being able to make it up or do you see sitting in a working lunch session until you get it finished more of a punishment.

Participant: The zero cause I thought...yea...the zero

Researcher: Ok and why do you see the zero as more of a punishment?

Participant: Because you don't have any time to make it up because you were supposed to do it and then you didn't do it so you don't get to make it up.

Researcher: (laughs) And you're like that's it!

Participant: (giggles) Yea

Researcher: So do you think uh for you...um your grade being affected you think that's more of a punishment than losing time with friends and things like that... the socializing. You see that as more of a punishment?

Participant: Uh huh...yep

Researcher: Ok let's see. Alright so next question. It's real similar to what we just said. So same type of thing. We're looking at um having a zero in the gradebook and not being able to make up the assignment versus doing the working lunch session and being able to make up the missing assignment. Which one would help you be more motivated to turn in your math assignment on time? Would you be more motivated if you knew that you would have to miss out on socializing with your friends or if you were to get a zero in the grade book.

Participant: Uh the zero in the grade book

Researcher: Ok why do you think that would motivate you better?

Participant: Because I want my grades to be good so I don't want a zero

Researcher: Ok alright...so that would be more motivation to you. Ok. In what ways could having the opportunity to make up any missing assignments help you with your math learning experience? So in what ways can having the opportunity to make up your missing math work how can that help you with your math learning experience?

Participant: Um to make sure that you like understand it more and get better grades because you'll be able to finish it.

Researcher: That's true. That's very true. Ok alright so before we conclude our interview is there anything else you would like to add to our conversation about the use of punishment versus negative reinforcement in your learning experience?

Participant: No

Researcher: Ok well thank you so much for your participation in this study and today's interview.

Appendix H

Qualitative Post-Interview with Participant 001

Researcher: Thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. Do you have any questions or concerns before we begin? Can you say it out loud?

Participant: No

Researcher: Ok, with your permission, we will begin our interview. Would you consider a working lunch detention, with the opportunity to make up a missing assignment or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment?

Participant: I'd rather do the lunch period.

Researcher: Ok, so you'd rather do the lunch period. So are you saying then that you feel that the zero in the grade book is more of a punishment?

Participant: Yeah

Researcher: Yes. Ok. Why would you consider the zero in the grade book more of a punishment than....?

Participant: Because you would be failing and you wouldn't have the opportunity to make it up.

Researcher: Ok alright. So you feel like if I don't have the opportunity to make it up, that's a punishment. Ok, would you be more motivated to turn in a math assignment on time if you knew that you would have to miss out on socializing with your friends during lunch or if you were to get a zero in the grade book?

Participant: Get a zero in the grade book.

Researcher: Ok so that one's more motivating to you. Why is that?

Participant: Because I'd rather miss out with my friends than to get a zero.

Researcher: Ok alright. In what ways could having the opportunity to make up any missing assignments help you with your mathematics learning experience?

Participant: You would get better grades and such.

Researcher: Ok anything else?

Participant: No

Researcher: Ok. Before we conclude our interview, is there anything else that you would like to add to our conversation about the use of a punishment versus negative reinforcement in your learning experience?

Participant: Nope

Researcher: Thank you so much for your participation in this study and today's interview.

Appendix I

Qualitative Post-Interview with Participant 003

Researcher: Alright thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. Do you have any questions or concerns before we begin?

Participant: No

Researcher: With your permission, we will begin our interview. Ok...Would you consider a working lunch session, where you have the opportunity to make up a missing assignment, or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment?

Participant: I'd say that uh getting a zero in the gradebook would be very it'd be kinda strict and like let's say the kids can't like they don't know how to do their work and when they go ask their teacher it's already due so they they can't turn it in so I'd say that so I'd say that maybe if you have a working lunch session it would be a better punishment.

Researcher: Ok... alright.

Participant: So that they can still get their work in.

Researcher: Ok. So you see that the zero is definitely that the zero is more of a punishment or the working lunch session is more of a punishment?

Participant: Well the zero is more of a punishment but...

Researcher: So the working lunch session would be something that you feel like would be a better option for students

Participant: Yes

Researcher: Ok. Why would you consider that zero more of a punishment versus the working lunch session?

Participant: Because if you if you have a zero that means that you can learn from your mistakes and make up well and you can see if your teacher can let you do some make up work or do some like Edge.. Yeah Edgenuity or Dreambox or something like that.

Researcher: Sure yeah ok. Alright, would you be more motivated to turn in a math assignment on time if you knew that you would have to miss out on socializing with your friends during lunch or if you were to get a zero in the grade book and why? Would you be more motivated to turn in your math assignment on time if you knew that you would miss out on hanging out with your friends during lunch or if you were to get the zero?

Participant: Can I kinda change that uh friend's thing just a little bit

Researcher: Sure

Participant: To band

Researcher: Sure

Participant: If it was in a band kind of state, I would have to go with the zero in the grade book because I want to be in band and band is I like band right now and band is

Researcher: That's your thing

Participant: Yeah

Researcher: So if it's something that is important to you you feel like that you would if it were band let's say or even hanging out with your band friends at lunch you feel like you would rather have the zero than miss out on the band thing?

Participant: Yes

Researcher: Ok alright. Why is that?

Participant: Because uh if you get too many zeros well really if you get like bad grades then you get kicked out of band but I would be more motivated to get my work turned in if I I knew that if I didn't get my work turned in I would get a zero and I would be out of band.

Researcher: Alright...in what ways could having the opportunity to make up a missing assignment help you with your mathematics learning experience? Having the opportunity to make up any missing work, how can that help you with your math learning?

Participant: Well, if you're able to make up the work and you like don't know what you're supposed to do then you can just ask your teachers and uh she'll say you can make it up but you won't really get the same grade you'll maybe get twenty points off or ten points off.

Researcher: So let's say that you don't get any points taken off.

Participant: Then...

Researcher: Is it gonna help you with your learning you think?

Participant: It would. It would help for the learning stance not for like being able to get a one hundred even if I don't do the work.

Researcher: Before we conclude our interview, is there anything else that you would like to add to our conversation about the use of punishment versus negative reinforcement in your learning experience?

Participant: Well are y'all actually gonna to try to get this whole system put into schools?

Researcher: This is just a study that I'm doing for my doctoral dissertation. So it's a study that I'm doing because I thought it would be interesting to see the outcome, and I've looked at a lot of research on grading practices and negative reinforcement and punishment, so I want to see how does that work in the middle school setting and which one is more motivating to students and that was the whole point behind it. So, I don't know. They might once they see my research and see if one is more beneficial than the other it might be that teachers might kind of change their practices a little bit.

Participant: Ok.

Researcher: We'll see.

Researcher: Alright, well thank you so much for your participation in this study and today's interview.

Appendix J

Qualitative Post-Interview with Participant 004

Researcher: Thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. Do you have any questions or concerns before we begin?

Participant: No

Researcher: Ok with your permission, we will begin our interview. Would you consider a working lunch detention, with the opportunity to make up a missing assignment, or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment? Which one would you see as more of a punishment?

Participant: The grade book cause like when you don't give them an opportunity to make it up...it's a lot harder.

Researcher: Yeah...what is it a lot harder for?

Researcher: Just like when you... not all of you don't learn...so when you make a zero either you get every question wrong or you don't do it. So, either way you're not learning.

Researcher: K, alright. Why would you consider that zero in the grade book more of a punishment than sitting in the working lunch session?

Participant: Cause it decreases your grade. Therefore, you could fail.

Researcher: True...So would you say that for you your grade is definitely more important than socializing with your friends at lunch time.

Participant: For me, I don't think so because I don't think that for the profession I will have in the future that I don't think that school right now is a key factor for what I...

Researcher: That's interesting. What do you want to do when you...?

Participant: I want to be a musician.

Researcher: Ok, what do you play?

Participant: Guitar

Researcher: Guitar alright. So you want to be a traveling musician?

Participant: Uh-huh

Researcher: Uh...just a side note...my cousin just finished with his degree in uh music from MTSU, and he's a guitarist. So he's wanting to...well he's not quite sure how he wants to use that. But...he's considered going and getting a master's degree in jazz music in Texas, but he's still kinda uncertain. He works for a music store right now. But anyways...back to this.

Participant: Ok.

Researcher: Would you be more motivated to turn in a math assignment on time if you knew that you would have to miss out on socializing with your friends during lunch or if you were to get a zero in the grade book and why? So which one is more motivating?

Participant: Personally, I think that when when you get in trouble the teacher says that you made that choice, but most of it is like a habit or it's just like an instinct... something happens and your quick witted and you do whatever you think but you don't really make that choice. That's I don't think that most people will make the choice to ok if I don't do this turn this in on time the first time I'll get a zero. I don't think that people think that way. Not at first at least.

Researcher: So you think it's just they're not doing it with the intent of I'm just blatantly not going to turn this in. They just...

Participant: Yeah no...well some people yeah...but most people get carried away with other things in life and when that happens things fall apart.

Researcher: So I think you're saying that at least in this stage in life right now there are just more things important than to worry about getting every single assignment turned in on time.

Participant: Yeah

Researcher: Ok, so...if you were to say socializing with your friends versus getting all of your assignments turned in on time is one of those or missing out on time with your friends which one of those would be more motivating to you?

Participant: It totally depends on the person because if you want to be Neil deGrasse Tyson when you grow up... then yeah you'd want to but if don't if you're not wanting to go to college if you're not wanting to do anything with the knowledge you've gained then I don't think it matters.

Researcher: Ok alrighty. In what ways could have the opportunity to making up...excuse me... to make up any missing assignment help you with your mathematics learning experience?

Participant: When...well, cause sometimes you don't you get side tracked and you have other things to make up so...like when you you have to make everything else up so when you're making everything else up you have to make up what you're making up now. If that make sense.

Researcher: Uh huh

Participant: So...

Researcher: So do you think it would help your learning at all? In any way? Being able to have that working lunch session?

Participant: Yeah...Yeah I do.

Researcher: Ok why? Like how do you think that that could help?

Participant: Cause people sit around in class all day and don't do anything. But when you put them in a working lunch, away from their friends, away from this social life that they've worked thirteen years to create it angers people and when that happens they don't want to be in there anymore. And they...

Researcher: So you think they'll do whatever they need to do to get out of it.

Participant: Yeah

Researcher: Ok...alrighty. So before we conclude our interview, is there anything else that you would like to add to our conversation about the use of punishment versus negative in your learning experience?

Participant: No

Researcher: Ok thank you so much for your participation in today's interview.

Appendix K

Qualitative Post-Interview with Participant 005

Researcher: Thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. Do you have any questions or concerns before we begin?

Participant: No

Researcher: Ok...with your permission, we will begin our interview. Would you consider a working lunch session, with the opportunity to make up a missing assignment or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment?

Participant: Um...the zero

Researcher: Ok. Why would you consider the zero without the opportunity to make up an assignment more of a punishment than the working lunch session?

Participant: Because you could fail more and you wouldn't be able to make it up.

Researcher: Would you be more motivated to turn in a math assignment on time if you knew that you would have to miss out on socializing with your friends during lunch or if you were to get a zero in the grade book and why? So which one is more motivating to you?

Participant: To do the working lunch

Researcher: Ok that's more mot...so doing the working lunch session where you have the opportunity to make it up that's more motivation to you to turn in something on time. Ok. Why is that?

Participant: Because I wouldn't be failing and...

Researcher: Ok alright um in what ways could having the opportunity to make up a missing assignment help you with your mathematics learning experience? So having that opportunity to make up your missing work in what ways could that help you with your learning?

Participant: Um (Student pauses to think for several seconds)

Researcher: Could it? Do you think it could?

Participant: (Shakes head yes but still thinking)

Researcher: Ok how? Having the opportunity to make up missing work, how could that help you with your learning in math?

Participant: You'd be able to understand it more.

Researcher: Ok just because you'd have more time to practice with it?

Participant: Uh huh

Researcher: Ok, um. Let me kinda go back just a second. So you said it's more motivating to you to turn in your stuff on time if you were to miss out on time hanging with your friends. So, are you saying then that you would rather have the zero versus being able to hang out with your

friends at lunch. Or you it's more motivating to you like oop I better get this assignment in because I'm going to get a zero if I don't.

Participant: Yes

Researcher: Ok, ok. Alright. I just wanted to clarify. Alright um before we conclude our interview is there anything else that you would like to add to our conversation about the use of punishment versus negative reinforcement in your learning experience?

Participant: No

Researcher: Ok thank you so much for your participation in this study and today's interview.

Appendix L

Qualitative Post-Interview with Participant 006

Researcher: Thank you so much for your participation in today's interview. My name is Kristian Edgeman, and I am a doctoral student at Kennesaw State University conducting research for my doctoral dissertation. This interview will take around thirty minutes and will include five formal questions. I may ask a few additional questions after some of your responses to get a little better idea of what you are saying. I would like your permission to audio record this interview so that I can accurately transcribe the information that you give me today. If at any time during our interview you wish to stop the interview or the audio recording, please feel free to let me know, and we will definitely stop. I also want to remind you that all of our conversation today is confidential. Your responses will remain confidential and will only be used for educational purposes. At this point I would like to receive your verbal consent to proceed with the interview and to inform you that your participation in today's interview implies your consent. Do you have any questions or concerns before we begin?

Participant: No

Researcher: Ok, with your permission, we will begin our interview. Would you consider a working lunch session, where you have the opportunity to make up a missing assignment, or a zero in the grade book, without the opportunity to make up a missing assignment, more of a punishment?

Participant: The zero without getting the opportunity to go to lunch.

Researcher: Ok. Why would you consider the zero in the grade book without the opportunity to make up the missing work more of a punishment than sitting in a working lunch session?

Participant: Because if you're sitting in a working lunch session then like you get the opportunity but like if you just get a zero then you don't actually get to try to do anything.

Researcher: Alright. Would you be more motivated to turn in a mathematics assignment on time if you knew that you would have to miss out on socializing with your friends at lunch or if you were to get a zero in the gradebook and why? So which one is more motivating to you?

Participant: If I got a zero in the grade book cause I don't like getting zeros.

Researcher: Ok. Alright. In what ways could having the opportunity to make up any missing assignments help you with your mathematics learning experience?

Participant: I guess some people just like wouldn't do it and they wouldn't learn anything. But you have to actually do it, and it would make you learn stuff.

Researcher: Ok alright. Any other ways that you think that having the opportunity to make up missing assignments that it might help you in your learning?

Participant: (Shakes head no)

Researcher: No? Ok, before we conclude our interview is there anything else you would like to add to our conversation about the use of punishment versus negative reinforcement in your learning experience?

Participant: No

Researcher: Ok well thank you so much for your participation in this study and today's interview.

Appendix M

Copy of Pretest, Mid-test, Posttest Summative Assessment

1/12/2018

Kerry Oren - 7th grade second semester

Edulastic

7th grade second semester

Due: March 02, 2017 | 88:00 AM

813310000

Created by Kerry Oren

Q1: The cost of a tent rental is \$160 for 5 days. At this rate, how much does it cost to rent the tent for one day?

- ☐ A \$25
- ☐ B \$30
- ☐ C \$32
- ☐ D \$35

Q2: A is a ratio that compares two quantities with different kinds of units.

1.

- ☐ rate
- ☐ proportion
- ☐ coordinate plane

Q3: Two ratios that have the same value.

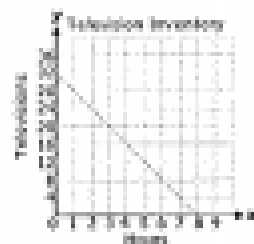
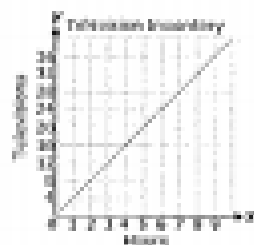
- ☐ A Equivalent Ratios
- ☐ B Unit Rate
- ☐ C Unit Ratio
- ☐ D Rate of Change

Marie Curie - Fifth grade second semester

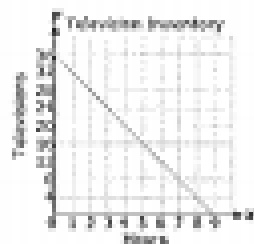
Television Inventory

Week

Television (in)



1



- ☐ A W°
☐ B K°
☐ C F°
☐ D C°

1/13/2018

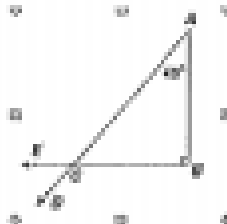
Kerry Olson - 7th grade second semester

Q6: 1. Amber is doing a research project in science class. She wants to know how much rain various cities in Oklahoma receive. Help Amber order the evidence she collected by listing the rainfall totals of the cities from least to greatest.

City	Total Rainfall Amount
Tulsa (T)	5/12
Oklahoma City (O)	8/10
Red (R)	11/6
Lawton (L)	5/8
Clinton (C)	2/5

- ☐ **A** O, E, L, C, T
☐ **B** C, L, E, O, T
☐ **C** O, T, L, E, C
☐ **D** C, O, E, L, T

Q7: In the figure to the right, triangle ABC is a right triangle and the measure of Angle A equals 40 degrees. What is the measure of angle ECD?



- ☐ **A** 40 degrees
☐ **B** 50 degrees
☐ **C** 130 degrees
☐ **D** 140 degrees

1/12/2018

Kerry Chen - 7th grade second semester

Q8: The product of the numerator of one ratio and the denominator of the other ratio. The cross products of any proportion are equal.

- ☐ **A** Complex Fraction
- ☐ **B** Constant Rate of Change
- ☐ **C** Unit Rate
- ☐ **D** Cross Products

Q9: Lanny goes to the bank and puts \$4000 in a savings account. He earns a simple interest of 2.5%. If he leaves the money in the account for five years, what is the total amount in the account after the five years? \$

Q10: Find the value of x in each of the the direct variation proportions.

Expressions	$x = 3$	$x = 20$	$x = 4$
$\frac{1}{3} = \frac{10}{x}$			
$\frac{1}{3} = \frac{x}{9}$			
$\frac{2}{x} = \frac{12}{30}$			

Q11: Mr. Jones can write 10 tests in 4 hours. This weekend, he needs to write 25 tests. How long will it take him?

Select all of the proportions below that model this situation. Note, you do not need to solve for x .

- ☐ **A** $\frac{10 \text{ tests}}{4 \text{ hours}} = \frac{25 \text{ tests}}{x \text{ hours}}$
- ☐ **B** $\frac{10 \text{ tests}}{25 \text{ tests}} = \frac{4 \text{ hours}}{x \text{ hours}}$
- ☐ **C** $\frac{10 \text{ tests}}{x \text{ hours}} = \frac{25 \text{ tests}}{4 \text{ hours}}$

5/13/2018

Kerry Oren - 7th grade second semester

Q12: Jane paints clay figurines to sell at a crafts fair. The graph shows that the number of figurines she paints, y , is directly proportional to the number of days she paints, x . Place the correct responses to the following questions in the empty box provide below.

- a) Find the constant of proportionality.
- b) What does the constant of proportionality represent in this situation?
- c) How long will it take Jane to paint 30 figurines?

DRAG DROP VALUES

5

10

30

6 days

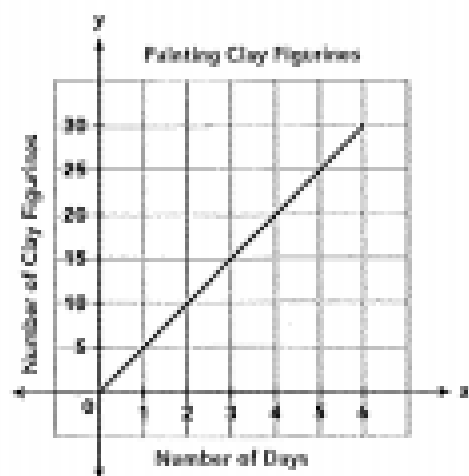
4 days

10 days

the number of clay figurines she paints per day.

the number of clay figurines she paints per week.

the number of clay figurines she paints per hour.



- a) Constant of proportionality is
- b) The constant of proportionality represents
- c) Jane took to paint 30 figurines.

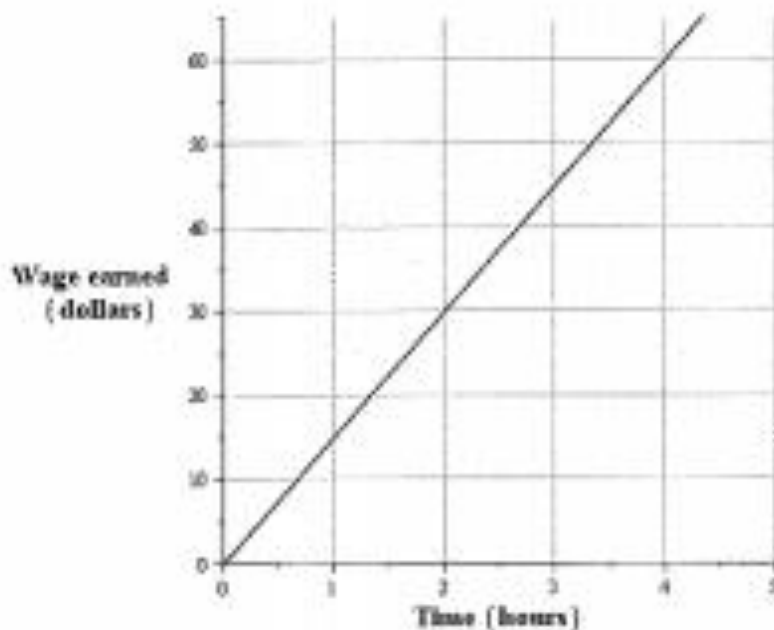
1/12/2018

Kerry Olson - 7th grade second semester

Q13: Part A

Jonathan works at a bookstore.

The amount of money he earns is directly proportional to the number of hours he works. The graph shows the amount of money, in dollars, he earns in t hours.



Find the constant of proportionality.

Answer: dollars per hour.

How much money does Jonathan earn after working 3 hours?

Answer:

Part B

Write a direct proportion equation that relates the money earned (y) to the hours worked (t).

Answer:

a.

- ☐ \$45
☐ \$15
☐ \$30

8/12/2018

Kerry Green - 7th grade second semester

Q14: Using the table of values, find the direct proportion equation in the form $y = kx$, where k is the constant of proportionality.

x	y
1	12
2	24
3	36

- ☐ A $y = 12x$
- ☐ B $y = 24x$
- ☐ C $y = 36x$
- ☐ D $y = 12x + 12$
-

Q15: The cost of a student ticket at a movie theater can be determined by the equation: $C = \$5.50x$, where C is the cost and x is the number of student tickets. Which statements are true about this situation?

- I. The constant of proportionality is \$5.50
- II. The unit rate is \$2.25
- III. Two movie tickets cost \$11.00

- ☐ A I only
- ☐ B II only
- ☐ C I and III only
- ☐ D I, II, III
-

Q16: The table below represents a relationship between the time a turtle walks and the distance the turtle travels.

Time and Distance Turtle Walks

Time (minutes)	Distance (feet)
5	120
20	480
30	720
50	1,200

What is the unit rate represented in this table?

5/12/2018

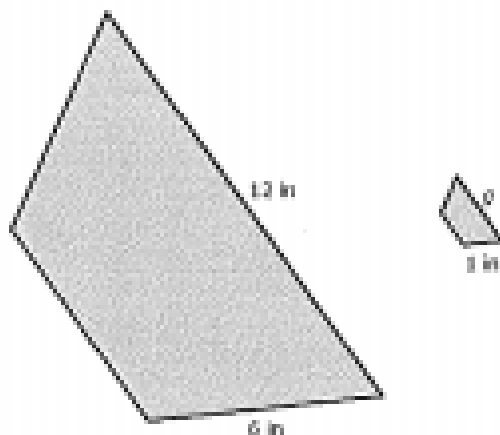
Kerry Oren - 7th grade second semester

Q17: The scale of a model train is 1 inch to 13.5 feet. One of the cars of the model train is 5 inches long. What is the length, in feet, of the actual train car?

- ☐ A 67.5
- ☐ B 32.4
- ☐ C 14.5
- ☐ D 2.7

Q18: On a scale drawing of Oak Grove, two landmarks are shown 5 inches apart. These two places are actually separated by 35 miles. What is the map's scale? 1 inch = miles

Q19: If the following shapes are similar then find the measure of the missing length g ? Type your result in the empty box provided below.



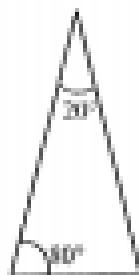
Note: Figure not drawn to scale.

$g =$ inches

1/13/2018

Kerry Chen - 7th grade second semester

Q20: Find the missing angle.



- ☐ A 100°
- ☐ B 50°
- ☐ C 80°
- ☐ D 70°

1/12/2018

Kerry Glen - 7th grade second semester

Q21: Below are two triangles that are drawn to scale.

Find the missing lengths as well as the scale factor.

Numbers may be used once or not at all.

DRAG DROP VALUES

1.5

3

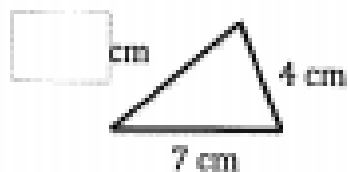
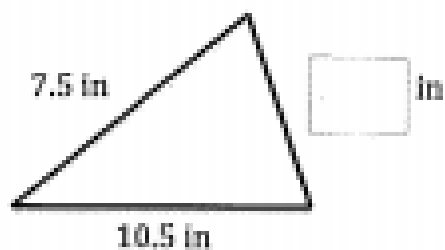
4.5

5

6

7.5

13.5



The scale factor used is

Note: Drawing is not to scale

5/12/2018

Kerry Ores - 7th grade second semester

Q22: Could a triangle have side lengths of 4, 8, 2?

a.

☐

yes

☐

no

☐

maybe

Q23: Determine if the three lengths given will be able to construct a triangle or not.

Lengths	Yes they can construct a triangle	No, the lengths will not construct a triangle
5, 10, 2		
8, 2, 10		
13, 15, 23		
1, 17, 3		
33, 30, 21		

1/12/2018

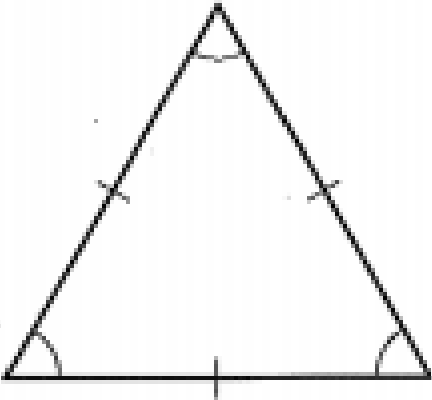
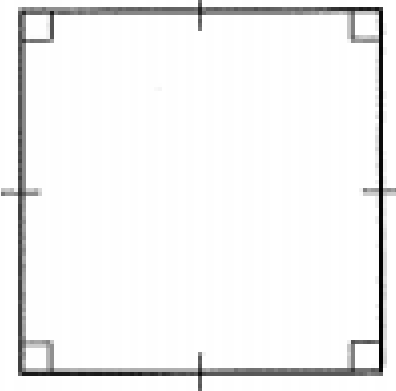
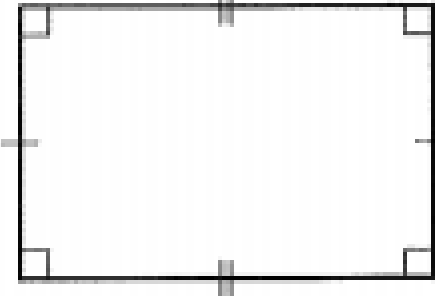
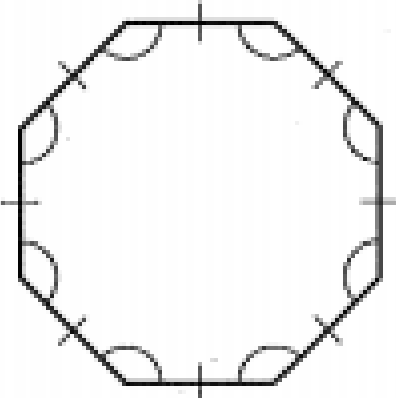
Kerry Green - 7th grade second semester

Q24: Indicate whether each of the following shapes is a possible two- dimensional cross sections of a cube.

Put only one check mark in each row of the table below.

1/12/2018

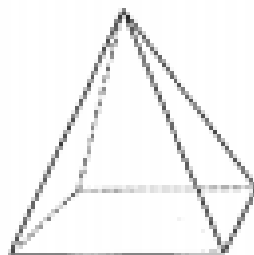
Kerry Chen - 7th grade second semester

Shape	Is a Possible Cross Section of a Cube	Is not a Possible Cross Section of a Cube
		
		
		
		

1/12/2018

Kerry Dean - 7th grade second semester

Q25:



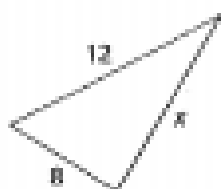
The figure above represents a right square pyramid.

Indicate whether each of the following shapes is a possible two-dimensional cross sections of the pyramid.

Put only one check mark in each row of the table below.

Shape	Is a Possible Cross Section of the Pyramid	Is not a Possible Cross Section of the Pyramid
An isosceles triangle		
A square		
A trapezoid		

Q26: Which number could not be a value of x ?



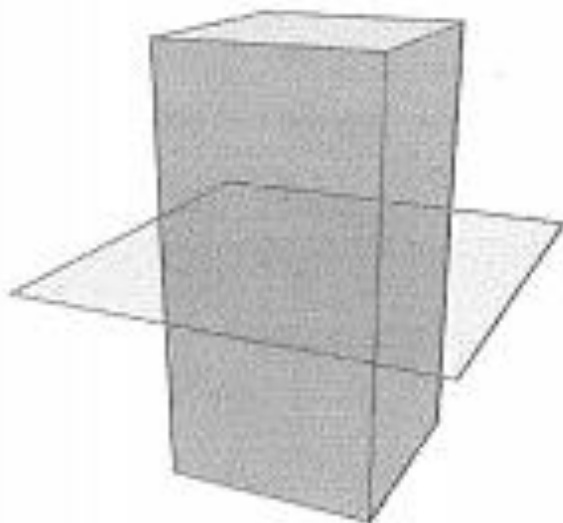
(Figure not drawn to scale)

- (A) 8
- (B) 9
- (C) 12
- (D) 21

1/12/2019

Kerry Owen - 7th grade second semester

Q27: The figure below shows a right rectangular prism whose base is a square.



Which shape does the intersection of the horizontal plane with the prism look like?

A



B



C



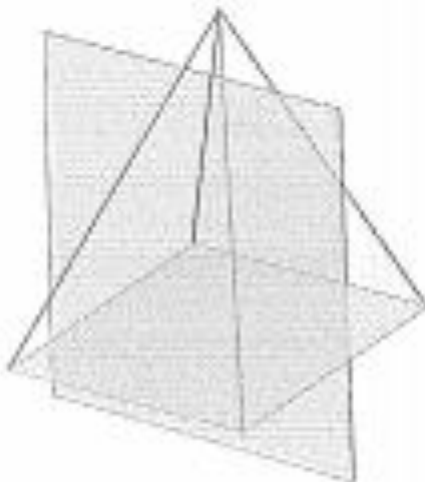
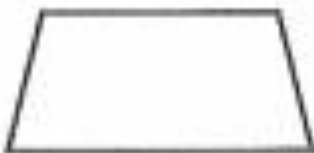
D



1/12/2018

Kary Oren - 7th grade second semester

Q28: The figure shows the location at which a slice is taken of a pyramid with a square base. What will be the shape of the two-dimensional slice obtained?

**A****B****C****D**

1/12/2018

Kerry Oren - 7th grade second semester

Q29: Jamal will slice a right circular cylinder into two congruent pieces. Which two-dimensional plane sections could result from the slice Jamal makes?

Select each correct answer.

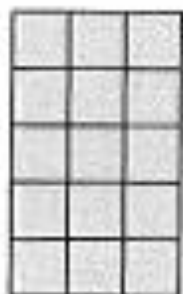
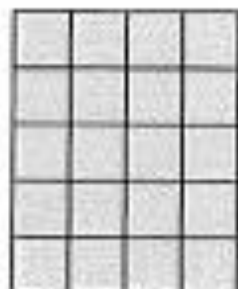
- ☐ **A** circle
- ☐ **B** pentagon
- ☐ **C** hexagon
- ☐ **D** triangle
- ☐ **E** rectangle

1/12/2018

Kerry Dean - 7th grade second semester

Q30: Part A

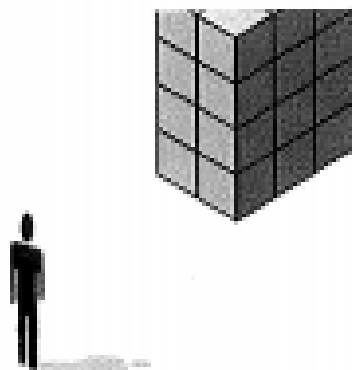
If you look at this object from the top, what will you see? Choose the appropriate figure from the options provided below.

**(A)****(B)****(C)****(D)****Part B**

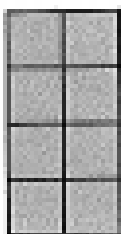
Consider the following object and choose the figure which can be seen from the front of the object.

1/12/2018

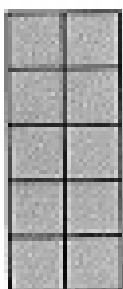
Kerry Chen - 7th grade second semester



1



2



Answer:

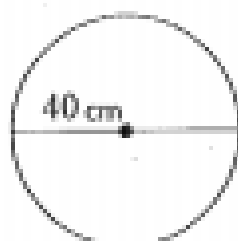
Note : Enter 1 or 2 in the empty box.

1/12/2018

Kerry Cross - 7th grade second semester

Q31: Find the circumference of the given circle given a diameter of 40 cm.

Use 3.14 as an approximation of π .



- ☐ A 120 cm
- ☐ B 100 cm
- ☐ C 125.6 cm
- ☐ D 40 cm

Q32: The circumference of a circle is 11π inches.

What is the area, in square inches, of the circle? Express your answer in terms of π .

Show your work.

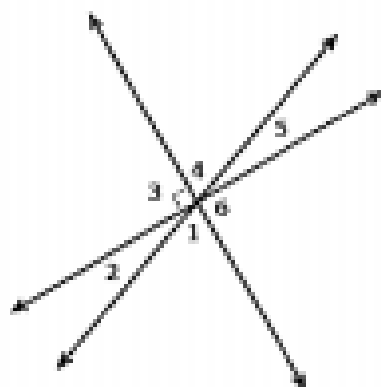
Q33: Which one of the following is true about complementary angles.

- ☐ A Two angles are complementary when they add up to 180° .
- ☐ B Two angles are complementary when they add up to 90° .
- ☐ C Two angles are complementary if they form a pair of adjacent angles.
- ☐ D Two angles are complementary if the measure of each angle is acute.

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Kerry Chen - 7th grade second semester

Q34: Which of the following angles is supplementary to $\angle 3$?



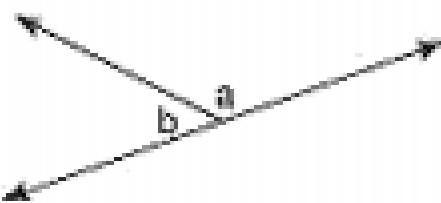
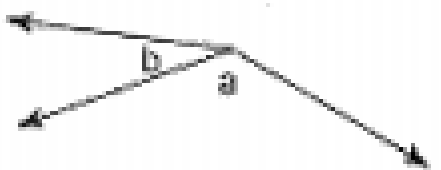
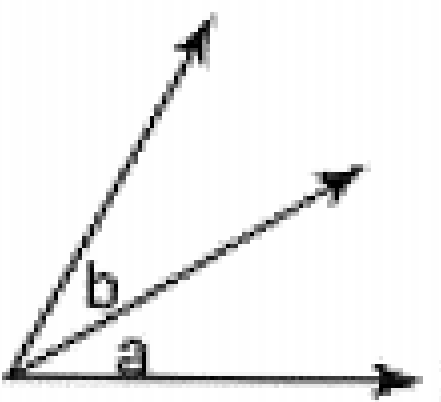
- ☐ A $\angle 1$
 - ☐ B $\angle 2$
 - ☐ C $\angle 4$
 - ☐ D $\angle 6$
-

1/12/2018

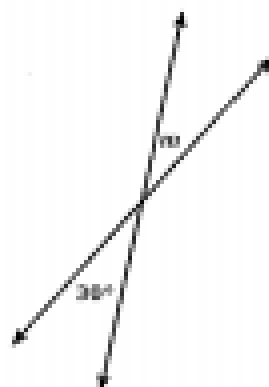
Kerry Green - 7th grade second semester

Q35: Choose the appropriate description for the following pair of angles.

Mark all that apply.

Pair of angles	Linear pair	Adjacent angles
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>

Q36: Find the value of m in the following figure.



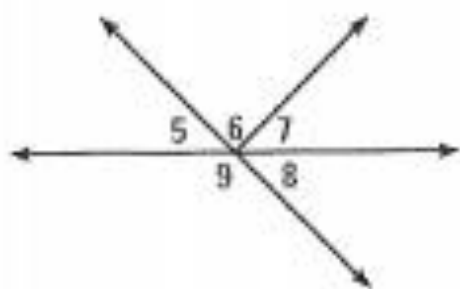
$m =$ degrees.

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Kerry Oren - 7th grade second semester

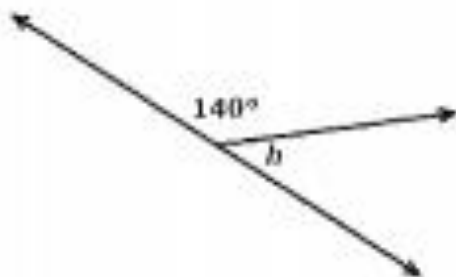
Q37: Determine whether the angles are adjacent angles, a linear pair, or vertical angles.

Some pairs of angles may have more than one relationship.



Angle	Adjacent angles	Linear pair	Vertical angles
$\angle 5$ and $\angle 6$			
$\angle 5$ and $\angle 9$			
$\angle 5$ and $\angle 8$			

Q38: Find the value of h in the following figure.



$h =$ degrees

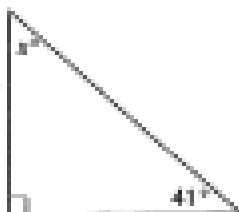
Q39: Determine which of the following pair of angles are complementary, supplementary, or neither.

Pair of angles	Complementary angles	Supplementary angles	Neither
135° and 45°			
55° and 35°			
55° and 45°			
77° and 13°			

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Kerry Chen - 7th grade second semester

Q40: Find the value of x in the triangle.



a.

a.

- ☐ 139
☐ 131
☐ 90
☐ 49

Q41: From the figure given below, find out the angles x° , y° and z° .

Assume that the lines are parallel.

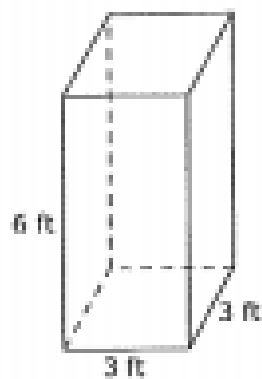


Angles	35°	70°	110°
x°			
y°			
z°			

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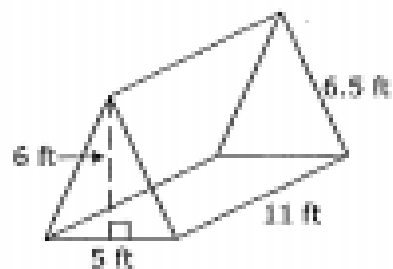
Kerry Green - 7th grade second semester

Q42: What is the surface area of the figure below?



- (A) 12 ft^2
 - (B) 36 ft^2
 - (C) 54 ft^2
 - (D) 90 ft^2
-

Q43: What is the volume of this triangular right prism?

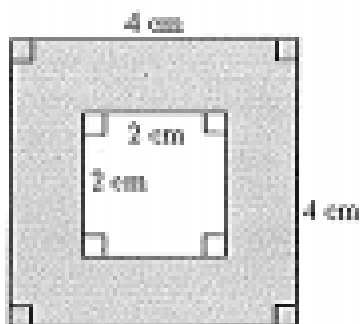


- (A) 165 ft^3
 - (B) 330 ft^3
 - (C) $1,073 \text{ ft}^3$
 - (D) $2,145 \text{ ft}^3$
-

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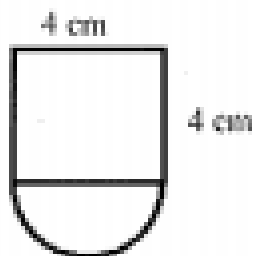
Kerry Oren - 7th grade second semester

Q44: Find the area of the shaded region and choose the appropriate result.



- ☐ A 10 cm^2
- ☐ B 12 cm^2
- ☐ C 4 cm^2
- ☐ D 16 cm^2

Q45: Find the area of the figure and type your result in the empty box.



Use $\pi = 3.14$.

Answer: cm^2

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Kerry Green - 7th grade second semester

Q46: For the following figures, determine the volume of each shape.

DRAG DROP VALUES

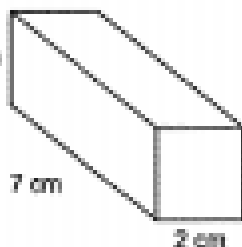
32cm^3

1440cm^3

38cm^3

720cm^3

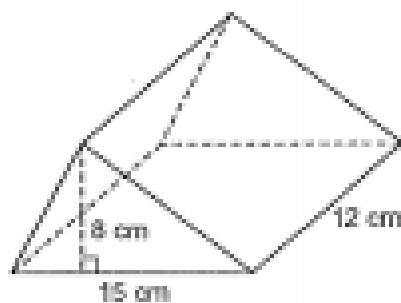
2 cm



7 cm

2 cm

Volume:



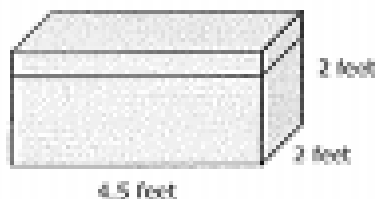
15 cm

Volume:

1/12/2018

Kerry Chen - 7th grade second semester

Q47: A storage chest is shown.



What are the volume and the surface area of this storage chest?

Enter your answers in the boxes.

Volume = cubic feet

Surface Area = square feet

Q48: A soap company changes the design of its soap from a cone to a sphere.

The cone had a height of 3 cm, and a radius of 2 cm.

The sphere has a diameter of 3 cm.

How much more soap, in cubic centimeters, does the new design contain than old design?

Use $3.14 = \pi$.

Answer: cm^3

Q49: Place the area of each polygon in order from smallest (top) to largest (bottom).

A trapezoid with bases 5 and 3 and a height of 7

A parallelogram with a base of 8 and a height of 4

A parallelogram with a base of 6 and a height of 4

A trapezoid with bases 10 and 6 and a height of 5

A right triangle with legs of length 6 and 10

1/12/2018

Kerry Chen - 7th grade second semester

Q50: Leticia randomly selected 25% of the seventh-grade students in her school and asked them their favorite season. Of the students surveyed, 51 chose summer as their favorite season. Based on the data, what is the most reasonable prediction of the number of seventh-grade students in her school who would choose summer as their favorite season?

- ☐ A 15
- ☐ B 75
- ☐ C 150
- ☐ D 200

Q51: Recently, frogs have been disappearing from the wild due to a contagious fungus. To monitor the current population in a certain region, Nancy collects 56 frogs, marks them, and releases them. Later, she collects 600 frogs and finds that 24 of them are marked. What is the best estimate for the frog population?

The best estimate for the frog population is frogs.

Q52: In a survey based on a random sample of high school seniors at Whitney High School, 70% of those surveyed said they do more than 3 hours of homework per day.

Based on this data which of the following conclusions are valid?

- ☐ A Exactly 70% of all seniors at Whitney do more than 3 hours of homework per day.
- ☐ B About 70% of seniors at Whitney do more than 3 hours of homework per day.
- ☐ C Exactly 30% of all seniors at Whitney do less than 3 hours of homework per day.
- ☐ D 30% of seniors at Whitney do no homework.

1/12/2018

Kerry Dean - 7th grade second semester

Q53: Consider the following samples given in the first column and select whether or not a sample is biased.

Samples	Biased	Not biased
An airline surveys passengers from a flight that is on time to determine if passengers on all flights are satisfied.		
A newspaper randomly chooses 100 names from its subscriber database and then surveys those subscribers to find if they read the restaurant review		
A team of researchers surveys 200 people at a multiplex movie theater to find out how much money state residents spend on entertainment.		

Q54: In a random sample, 45 out of 60 seventh grade students said they prefer pizza for lunch. How many servings should the cafeteria staff prepare for a class of 1000 ? Select all correct work shown.

Work	Yes	No								
$1000 \times \frac{45}{60} = \frac{x}{1000} \times 1000$										
$\frac{3}{4} = \frac{x}{1000}$										
<table border="1"><tr><td colspan="4">1000</td></tr><tr><td>250</td><td>250</td><td>250</td><td>250</td></tr></table> <p>750</p>	1000				250	250	250	250		
1000										
250	250	250	250							
$60x = 45$										
$\frac{45}{60} = \frac{x}{1000}$										

1/12/2018

Katy Olson - 7th grade second semester

Q55: Part A

Tristan asked his coworkers about how much time they spent commuting each morning.

This box-and-whisker plot shows the results.

Time spent commuting each morning



Find the median.

- ☐ A 10
- ☐ B 15
- ☐ C 20
- ☐ D 25

Part B

Find the interquartile range.

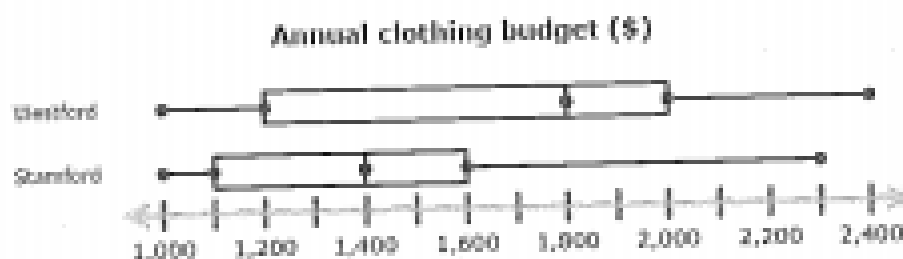
Answer:

1/12/2018

Kerry Green - 7th grade second semester

Q56: A store with branches in Westford and Stamford asked its customers about their households' annual clothing budgets.

These box-and-whisker plots show the results.



Whose interquartile range is higher?

a r

Whose median is higher?

b r

a.

☐

Westford

☐

Stamford

☐

Both the same

b.

☐

Westford

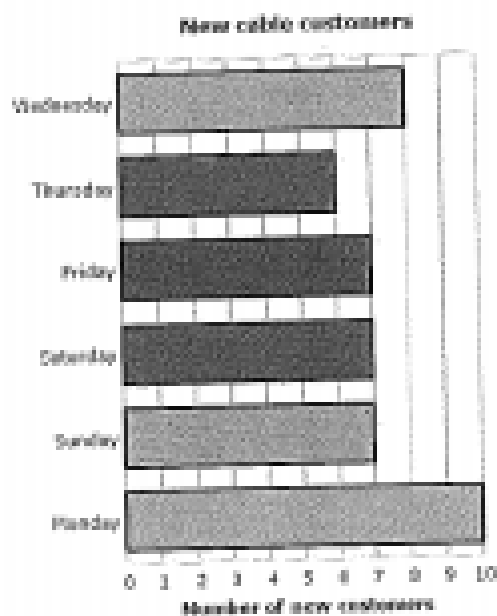
☐

Stamford

☐

Both the same

Q57: A cable company analyst paid attention to how many new customers it had each day.

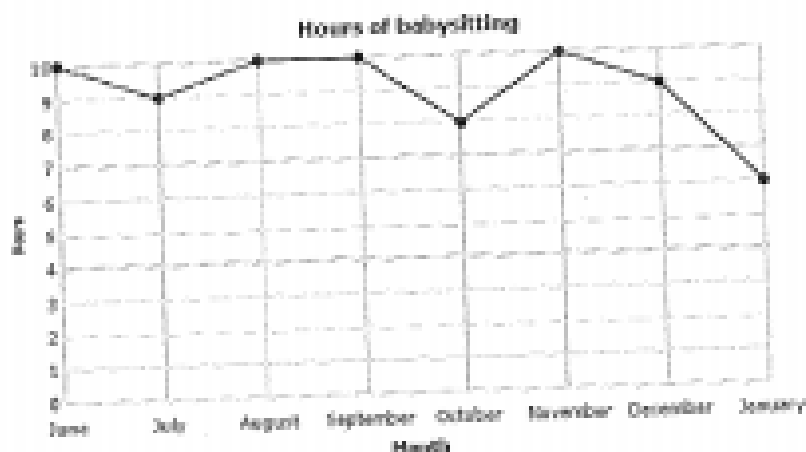


The range of the numbers is .

1/12/2018

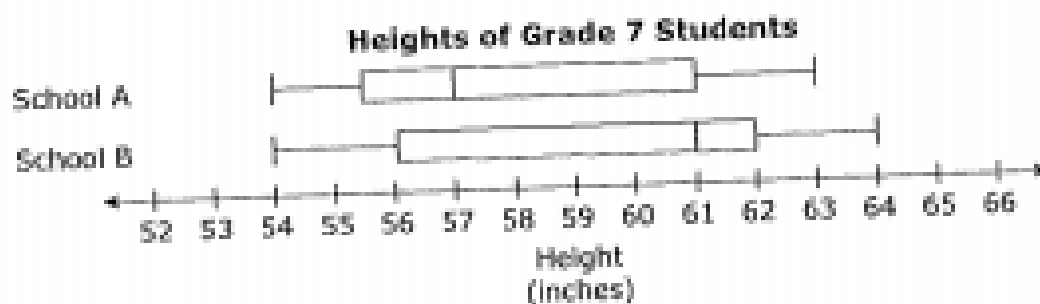
Kerry Cross - 7th grade second semester

Q58: Paul looked at his calendar to figure out how much time he spent babysitting each month.



The mean of the numbers is .

Q59: The box plot shows the heights of grade 7 students in two random samples from two different schools. The sample item from each school is 30% of the student population.



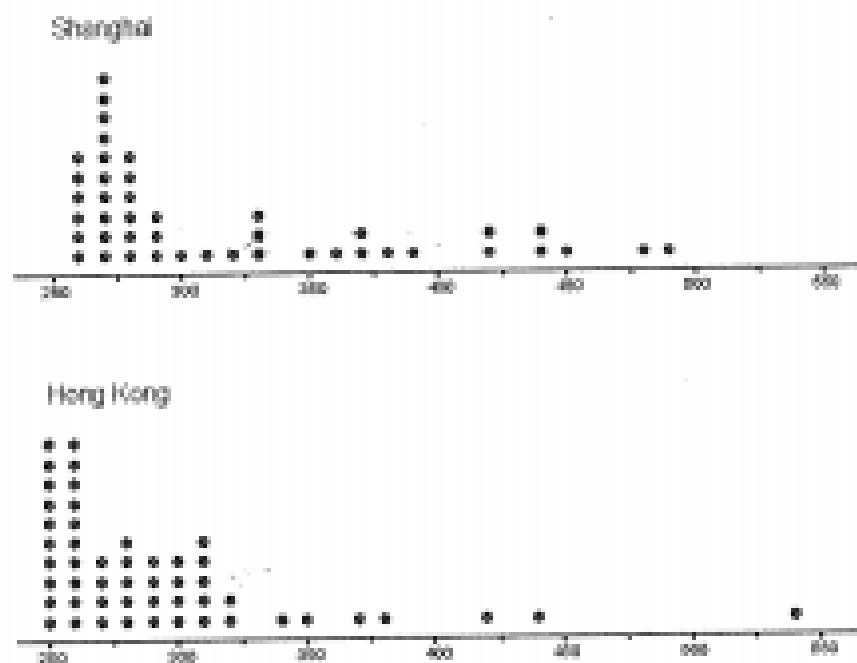
Based on the box plot, which comparison is true?

- ☐ A Grade 7 students from School A are typically shorter than grade 7 students from School B because of the difference in the interquartile ranges of grade 7 student heights at the schools.
- ☐ B Grade 7 students from School A are typically shorter than grade 7 students from School B because of the difference in the medians of grade 7 student heights at the schools.
- ☐ C Grade 7 students from School A are typically taller than grade 7 students from School B because of the difference in the interquartile ranges of grade 7 student heights at the schools.
- ☐ D Grade 7 students from School A are typically taller than grade 7 students from School B because of the difference in the medians of grade 7 student heights at the schools.

1/12/2018

Kerry Oren - 7th grade second semester

Q60: The dot plots below show the heights (in meters) of the tallest buildings in Shanghai and Hong Kong. Which places of information can be gathered from these dot plots?



- ☐ A Shanghai's buildings are much taller on average.
- ☐ B Shanghai has more buildings over 400 meters tall.
- ☐ C Hong Kong has the tallest building of these two cities.
- ☐ D The height of the tallest buildings in the Hong Kong vary noticeably more than those in Shanghai.

Q61: A chance event with probability 1 is certain to happen.

- ☐ A true
- ☐ B false

Q62: A chance event with probability 0.5 is certain to happen.

- ☐ A true
- ☐ B false

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Kerry Chen - 7th grade second semester

Q63: The probability of a chance event could be zero.

- ☐ A true
 - ☐ B false
-

Q64: If the probability that it will rain tomorrow is $\frac{1}{5}$, what is the probability that it will not rain tomorrow?

- ☐ A $\frac{4}{5}$
 - ☐ B $\frac{3}{5}$
 - ☐ C $\frac{2}{5}$
 - ☐ D $\frac{1}{10}$
-

Q65: If an event is likely to occur, which of the following best describes the probability that the event will occur?

- ☐ A The probability is between 0 and $\frac{1}{4}$
 - ☐ B The probability is between $\frac{1}{4}$ and $\frac{1}{2}$
 - ☐ C The probability is between $\frac{1}{2}$ and $\frac{3}{4}$
 - ☐ D The probability is between $\frac{3}{4}$ and 1
-

Q66: Which of the following events below will have an equally likely chance of happening?

- ☐ A if an event has a 5% chance of happening
 - ☐ B if an event has a 50% chance of happening
 - ☐ C if an event has a 100% chance of happening
 - ☐ D if an event has a 0% chance of happening
-

5/12/2018

Kerry Chan - 7th grade second semester

Q67: The probability of getting 1000 tails in 1000 coin tosses is zero.

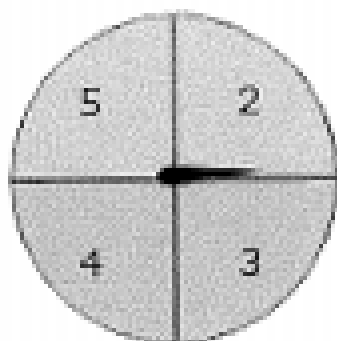
- ☐ A true
- ☐ B false
-

Q68: The total number of possible outcomes of rolling a regular six-sided die are :

- ☐ A 2
- ☐ B 4
- ☐ C 5
- ☐ D 6
-

Q69: You spin the spinner below once.

What is the $P(\text{getting a number less than 5})$?



- ☐ A 1
- ☐ B $\frac{3}{4}$
- ☐ C $\frac{1}{2}$
- ☐ D 2
-

1/12/2018

Kerry Olson - 7th grade second semester

Q70: A grocery store has 12 cartons of yogurt for sale, of which 3 are raspberry.

What is the probability that a randomly selected carton of yogurt will be raspberry?

- ☐ A $\frac{1}{2}$
 - ☐ B $\frac{1}{4}$
 - ☐ C $\frac{1}{3}$
 - ☐ D $\frac{4}{5}$
-

Q71: Nancy pulled a number of colored balls from a bag and recorded the results.

blue	6
black	3
red	2
green	7

Based on experimental probability, how many of the next 36 balls selected should you expect to be green?

- ☐ A 13
 - ☐ B 18
 - ☐ C 14
 - ☐ D 15
-

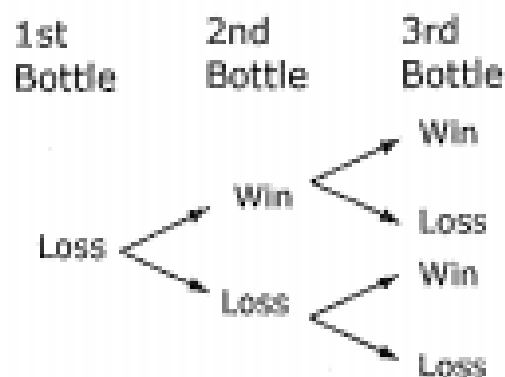
1/12/2018

Kerry Olson - 7th grade second semester

Q72: As part of a promotion, a soda company is including prize codes randomly under the caps of all the soda bottles it sells. Half of the bottles will contain a winning code, and half of the bottles will contain a losing code.

Part A

Choose a tree diagram that shows a possible prize code outcome of purchasing three soda bottles.

(A)**(B)****(C)**

None of the above

(D)

Both of the above

Part B

What is the theoretical probability that exactly two bottles will have a prize code under the cap when three bottles are purchased?

Answer:

1/12/2018

Kerry Dean - 7th grade second semester

Q73: Which tree diagram shows all of the possible outcomes for tossing a coin and rolling a fair number pyramid that has four sides labeled 1 through 4?

- (A)**
-
- (B)**
-
- (C)**
-
- (D)**
-

Q74: A marble is picked at random. Without putting the first marble back, a second marble is picked at random. Find the probability that first marble picked is green and second marble picked is red. Write your result as a percentage.



Answer: %

U120018

Kerry Oren - 7th grade second semester

Q75: How many possible outcomes are possible if you choose from 6 ice cream flavors, 3 different sizes of scoops, 2 toppings, and a waffle cone or a cup?

- (A) 36
(B) 24
(C) 18
(D) 72

Q76: You are having dinner at a restaurant that serves 5 kinds of pasta in 4 different flavors. The grid below show all of the possible combinations.

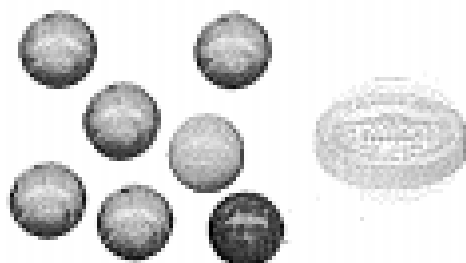
If you randomly pick your kind of pasta and flavor, what is the probability that you will end up with bow ties, cheese sauce, or both?

	Tomato Sauce	Cheese Sauce	Meat Sauce	Olive Oil
Spaghetti	Tomato Spaghetti	Cheese Spaghetti	Meat Spaghetti	Olive Oil Spaghetti
Bow Ties	Tomato Bow Ties	Cheese Bow Ties	Meat Bow Ties	Olive Oil Bow Ties
Fettuccine	Tomato Fettuccine	Cheese Fettuccine	Meat Fettuccine	Olive Oil Fettuccine
Ravioli	Tomato Ravioli	Cheese Ravioli	Meat Ravioli	Olive Oil Ravioli
Macaroni	Tomato Macaroni	Cheese Macaroni	Meat Macaroni	Olive Oil Macaroni

1/12/2018

Kerry Chen - 7th grade second semester

Q77: What is the probability of picking an orange marble and flipping tails?



A $\frac{1}{7}$

B $\frac{3}{14}$

C $\frac{2}{14}$

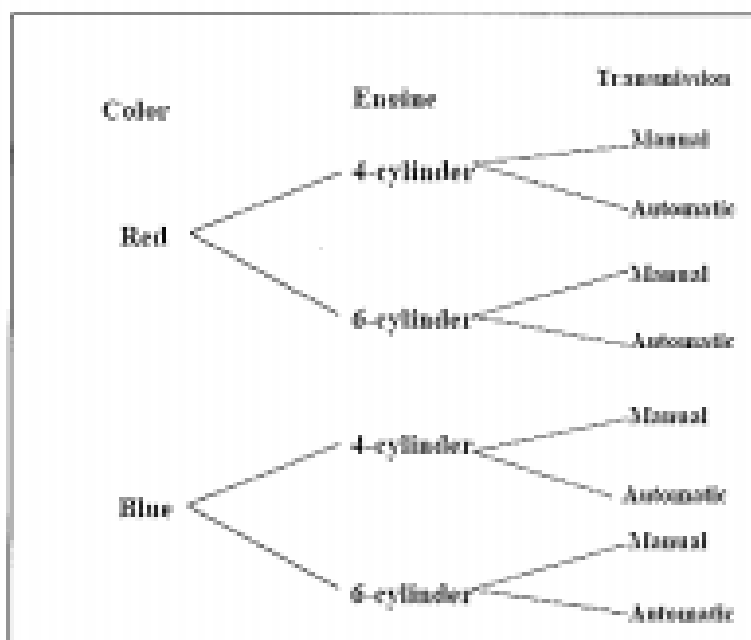
D $\frac{1}{14}$

1/12/2016

Kerry Green - 7th grade second semester

Q78: An automobile dealer has cars available with the combinations of colors, engines, and transmissions indicated in the following tree diagram.

A selection is made at random.



What is the probability of selecting a blue car with a 4 -cylinder engine and a manual transmission?

Answer:

a.

- ☐ 0.25
☐ 0.125
☐ 0.5
☐ 1.0

1/12/2018

Kerry Chen - 7th grade second semester

Q79: David picks a card at random.

Without putting the first card back, he picks a second card at random.



Are these two events dependent or independent?

Answer:

a.



Dependent event



Independent event

Q80: A box contains a penny, a nickel, and a dime.

Find the probability of choosing a dime first and without replacing the dime, choosing a penny.

A $\frac{1}{6}$

B $\frac{1}{3}$

C $\frac{1}{8}$

D $\frac{1}{9}$